User Manual

S9922 LTE Router

RICON®

MOBILE CONNECT TECHNOLOGY

We Ricon provide full support to customers, contact us freely if any questions.

RICON Technology FZE

	RICON Technology FZE P.O. Box no: 16111 Ras Al Khaimah U.A.E.
Addres	Operation office in Turkey: Ahi Evran Cad. No.1 Polaris Plaza Kat.6 No.32 Maslak/ İstanbul Turkey Tel.: (+90) 212 275 95 95 Fax: (+90) 212 346 26 70 Email: info@riconmobile.com
Website	http://riconmobile.com/

Copyright © RICON Technology FZE. All rights reserved.

All information in this user manual is protected by copyright law. Whereby, no organization or individual shall copy or reproduce the whole or part of this user manual by any means without written authorization from RICON Technology FZE.

Trademarks and Permissions

RICON® and DTU are the trademarks and logos of RICON Technology FZE. Other trademarks and logos mentioned in this manual belong to other organizations related. RICON Technology FZE does not own the rights of other trademarks and logos.

Caution

Due to product updates or functional upgrading, we may renew the content of this file, and this file only for reference. All statement, information, suggestion.etc in this file do not compose any form of guarantee and we RICON reserves the right of final explanation.

About This Document

Purpose

S9922 LTE Router is designed and manufactured by RICON, it based on 3G/LTE cellular network technology, industrial class quality. With its embedded cellular module, it widely used in multiple case like ATM connection, remote office security connection, data collection. Etc. This document introduced how to use S9922 and its function features.

Related Versions

The following table lists the product versions related to this document.

Model	Version
S9922	V11/V12/V13

Orginazition

Chapter	Description
1	Features of S9922 LTE Router and target market.
2	SW & HW structure of S9922 LTE Router.
3	How to installation of S9922 LTE Router.
4	Prepare to config S9922 LTE Router.
5	How to config S9922 LTE Router.
6	Typical application of S9922 LTE Router.
7	Frequently asked questions.

Conventions

Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	Description
	Indicates a potentially hazardous situation, which if not avoided, could result in equipment damage, data loss, performance degradation, or unexpected results.
	Indicates a tip that may help you address a problem or save your time.
	Provides additional information to emphasize or supplement important points of the main text.

Command Conventions

Convention	Description
Boldface	The keywords of a command line are in boldface.
Italic	Command arguments are in italics.
[ ]	Items (keywords or arguments) in brackets [ ] are optional.
{ x | y | ... }	Optional items are grouped in braces and separated by vertical ars. One item is selected.
[x | y | ...]	Optional items are grouped in brackets and separated by vertical bars. One item is selected or no item is selected.
{ x | y | ... } *	Optional items are grouped in braces and separated by vertical ars. A minimum of one item or a maximum of all items can be selected.
[x | y | ...] *	Optional items are grouped in brackets and separated by vertical ars. Several items or no item can be selected.
&<1-n>	The parameter before the & sign can be repeated 1 to n times.

Convention	Description
#	A line starting with the # sign is comments.

GUI Conventions

Convention	Description
Boldface	Buttons, menus, parameters, tabs, window, and dialog titles are in boldface. For example, click OK.
>	Multi-level menus are in boldface and separated by the ">" signs. For example, choose File > Create > Folder.

Keyboard Operations

Format	Description
Key	Press the key. For example, press Enter and press Tab.
Key 1+Key 2	Press the keys concurrently. For example, pressing Ctrl+Alt+A means the three keys should be pressed concurrently.
Key 1, Key 2	Press the keys in turn. For example, pressing Alt, A means the two keys should be pressed in turn.

Mouse Operation

Action	Description
Click	Select and release the primary mouse button without moving the pointer.
Double-click	Press the primary mouse button twice continuously and quickly without moving the pointer.
Drag	Press and hold the primary mouse button and move the pointer to a certain position.

Content

1 Product Introduce.....1-1

1.1 Overview.....1-1

1.2 Product positioning.....1-2

1.3 Function & Features.....1-2

1.4 Specification.....1-3

2 Product structure.....2-5

2.1 Hardware.....2-6

2.1.1 Appearance & Size.....2-6

2.1.2 Accessories.....2-8

2.2 Structure.....2-9

3 Installation of S9922 LTE Router.....3-10

3.1 Unpacking.....3-10

3.2 How to install.....3-10

3.2.1 SIM/UIM card install.....3-10

3.2.2 Ethernet cable connection.....3-11

3.2.3 Serial port connection.....3-11

3.3 Power supply.....3-12

3.4 Review.....3-12

4 Before config.....4-1

4.1 LED Status.....4-1

4.2 Local config.....4-2

5 Router config.....5-1

5.1 Overview.....5-1

5.2 Basic config.....5-1

5.2.1 Login WEB GUI.....5-2

5.2.2 Network config.....5-2

5.3 Application program configuration.....5-17

5.3.1 ICMP check.....5-17

5.3.2 DDNS configuration 5-20
5.3.3 SNMP configuration (optional) 5-22
5.3.4 M2M configuration 5-24
5.3.5 Timing configuration 5-25
5.3.6 Wake up configuration 5-28
5.3.7 DTU configuration (Optional) 5-31
5.3.8 GPS configuration (Optional) 5-34
5.4 Security 5-35
5.4.1 Overview 5-35
5.4.2 configuration 5-35
5.5 Forward configuration 5-42
5.5.1 Overview 5-42
5.5.2 NAT 5-42
5.5.3 Routing 5-45
5.6 VPN configuration 5-48
5.6.1 Overview 5-48
5.6.2 VPDN configuration 5-48
5.6.3 Tunnel configuration 5-51
5.6.4 IPSec configuration 5-52
5.7 System configuration 5-59
5.7.1 Overview 5-59
5.7.2 Local Log 5-59
5.7.3 Remote Log 5-60
5.7.4 Clock 5-61
5.7.5 Account 5-63
5.7.6 Network Test 5-64
5.7.7 Files 5-65
5.8 Status 5-68
5.8.1 Overview 5-68
5.8.2 Base Information 5-68
5.8.3 LAN 5-69
5.8.4 WAN 5-69
5.8.5 Modem 5-71
5.8.6 Routing Table 5-73
5.9 RESET button function 5-74
6 Typical application 6-1
6.1 Overview 6-1

6.2 Awake function 6-1
6.3 Parameter select 6-3
6.4 VPN 6-5
6.5 Timing Task 6-8
7 FAQ 7-1
7.1 Hardware Failure 7-1
7.1.1 All LED dark 7-1
7.1.2 SIM Slot 7-2
7.1.3 Ethernet Connection 7-2
7.1.4 Antenna Connection 7-2
7.2 Dial Online Problem 7-3
7.2.1 Dial discontinue 7-3
7.2.2 No Signal 7-3
7.2.3 Cannot find SIM/UIM card 7-3
7.2.4 Poor Signal 7-4
7.2.5 Compress Protocol not match 7-4
7.3 VPN Problem 7-4
7.3.1 VPDN cannot connect 7-4
7.3.2 VPN cannot communicate 7-5
7.3.3 Router can communicate but subnet cannot 7-5
7.4 WEB config problem 7-6
7.4.1 Updating firmware failure 7-6
7.4.2 Backup setting problem 7-6
7.4.3 Updating patch failure 7-6
7.4.4 CFE Updating failure 7-7
7.4.5 Update failure in WEB GUI 7-7
7.4.6 Forget Router Password 7-7

Table Content

Table 2-1 S9922 LTE Router size 2-6
Table 2-2 S9922 LTE Router accessories 2-8
Table 3-1 Serial port to RJ45 cable 3-12
Table 4-1 LED instruction 4-1
Table 5-1 LAN Parameter instruction 5-3
Table 5-2 WAN connection type parameter instruction 5-4
Table 5-3 “Modem” Parameter instruction 5-6
Table 5-4 Parameter instruction 5-12
Table 5-5 Connection type Parameter instruction 5-14
Table 5-6 Link Backup Parameter 5-15
Table 5-7 ICMP check rules Parameter instruction 5-18
Table 5-8 DDNS Parameter instruction 5-21
Table 5-9 SNMP Parameter instruction 5-23
Table 5-10 M2M Parameter instruction 5-24
Table 5-11 Timing task parameter instruction 5-27
Table 5-12 Wake up Parameter instruction 5-29
Table 5-13 DTU Parameter instruction 5-32
Table 5-14 GPS Parameter instruction 5-34
Table 5-15 IP filter parameter instruction 5-37
Table 5-16 Domain Filter parameter instruction 5-39
Table 5-17 MAC Filter explanation 5-40
Table 5-18 MAC Filter Parameter instruction 5-41
Table 5-19 NAT Parameter instruction 5-43
Table 5-20 MASQ rule Parameter instruction 5-45
Table 5-21 Routing Parameter instruction 5-47
Table 5-22 VPDN rule parameter instruction 5-50

Table 5-23 Tunnel rule parameter instruction 5-51
Table 5-24 IPSec Phase 1 Parameter instruction 5-54
Table 5-25 IPSec Parameter instruction 5-56
Table 5-26 IPSec Parameter instruction 5-58
Table 5-27 Remote log parameter instruction 5-60
Table 5-28 Clock Parameter instruction 5-62
Table 5-29 Account parameter instruction 5-64
Table 5-30 Network Test Parameter instruction 5-65
Table 5-31 Base information Parameter instruction 5-68
Table 5-32 LAN Parameter instruction 5-69
Table 5-33 WAN Parameter instruction 5-71
Table 5-34 Modem Parameter instruction 5-72
Table 5-35 Routing table Parameter instruction 5-74

Figure Content

Figure 1-1 Network structure 1-2
Figure 2-1 S9922 LTE Router Appearance 2-6
Figure 2-2 S9922 LTE Router Figure 2-7
Figure 2-3 S9922 LTE Router bottom view 2-8
Figure 2-1 Front pannel 2-9
Figure 2-2 Back pannel 2-9
Figure 3-1 Pop out SIM slot 3-11
Figure 3-2 SIM/UIM card install. 3-11
Figure 4-1 Local Area Connection 4-2
Figure 4-2 Connection properties 4-4
Figure 4-3 Internet protocol (TCP/IP) 4-4
Figure 4-4 Advanced TCP/IP Settings 4-7
Figure 4-5 TCP/IP address 4-7
Figure 4-6 Connectivity check 4-10
Figure 5-1 User identity page 5-2
Figure 5-2 LAN window 5-3
Figure 5-3 WAN window 5-4
Figure 5-4 Modem window 5-5
Figure 5-5 Modem page 5-5
Figure 5-6 Single module single SIM/dual module dual SIM 5-9
Figure 5-7 Single module dual SIM 5-9
Figure 5-8 Advanced setting 5-10
Figure 5-9 parameter select 5-11
Figure 5-10 add rule 5-12
Figure 5-11 Connection type window 5-14
Figure 5-12 Link Backup 5-15

Figure 5-13 ICMP Check tab 5-17
Figure 5-14 ICMP adding page 5-18
Figure 5-15 DDNS configuration 5-21
Figure 5-16 SNMP configuration 5-23
Figure 5-17 M2M configuration 5-24
Figure 5-18 Timing configuration 5-26
Figure 5-19 To add timing task 5-26
Figure 5-20 Wake up configuration 5-29
Figure 5-21 DTU configuration 5-32
Figure 5-22 GPS configuration 5-34
Figure 5-23 IP Filter tab 5-35
Figure 5-24 IP filter “Basic” type 5-36
Figure 5-25 IP Filter “Expand” type 5-36
Figure 5-26 Domain filter tab 5-39
Figure 5-27 Domain filter tab 5-39
Figure 5-28 MAC Filter tab 5-40
Figure 5-29 MAC Filter configuration 5-41
Figure 5-30 NAT tab 5-42
Figure 5-31 NAT rule configuration 5-43
Figure 5-32 MASQ configuration 5-44
Figure 5-33 Routing tab 5-46
Figure 5-34 Static Routing configuration 5-46
Figure 5-35 Policy routing configuration 5-47
Figure 5-36 VPDN configuration 5-49
Figure 5-37 VPDN rule configuration 5-49
Figure 5-38 L2TP tunnel status 5-50
Figure 5-39 Tunnel configuration 5-51
Figure 5-40 IPSec tab 5-53
Figure 5-41 IPSec phase 1 configuration 5-54
Figure 5-42 IPSec phase 2 configuration 5-56
Figure 5-43 IPSec configuration tab 5-57
Figure 5-44 Local Log tab 5-59
Figure 5-45 Remote Log tab 5-60

Figure 5-46 “NPT” Time Synch. 5-61
Figure 5-47 Manual Time Synch. Type 5-62
Figure 5-48 Account tab 5-63
Figure 5-49 Network Test Tab 5-65
Figure 5-51 Add an IP address 5-66
Figure 5-58 Base Information tab 5-68
Figure 5-59 “LAN” info 5-69
Figure 5-60 Static IP WAN status 5-70
Figure 5-61 DHCP WAN status 5-70
Figure 5-62 PPPoE WAN status 5-71
Figure 5-63 Modem Status page 5-72
Figure 5-64 Routing table page 5-73
Figure 6-1 Wake up/trigger setting example 6-2
Figure 6-2 Rules setting 6-3
Figure 6-3 parameter select setting 1 6-4
Figure 6-4 parameter select setting 2 6-5
Figure 6-6 IPSec Phase 1 6-6
Figure 6-7 IPSec Phase 2 6-6
Figure 6-8 IPSec 6-7
Figure 6-9 IPSec status 6-7
Figure 6-10 Timing 6-8
Figure 6-11 router online 6-8
Figure 6-12 router off line 6-9
Figure 6-13 router reboot 6-9

1 Product Introduce

About this chapter

Chapter	Content
1.1 Overview	Simple instroduction of S9922 LTE Router.
1.2 Product Positioning	Product Positioning of S9922 LTE Router
1.3 Function & features	Unique function & features
1.4 Specification	Detail specification of this router

1.1 Overview

S9922 LTE Router based on 3G/LTE technology, except tradition router function like VPN, firewall, NAT, SNMP, DHCP. S9922 support 3G/LTE as WAN interface, provide up to 100Mbps WAN bandwidth and up to 150Mbps Wi-Fi bandwidth. Plus, S9922 LTE Router support three modes: single module signle SIM, single module dual SIM, dual module dual SIM mode. The unique feature of S9922 LTE Router is network online & backup among WAN, WLAN, 3G/LTE network. This feature makes S9922 could maximum the network availability, reduce the possibility of network failure, to avoid the loss caused by network error. Also, definable route table makes customers could assign bandwidth by business type, full use the bandwidth and lower the net delay.

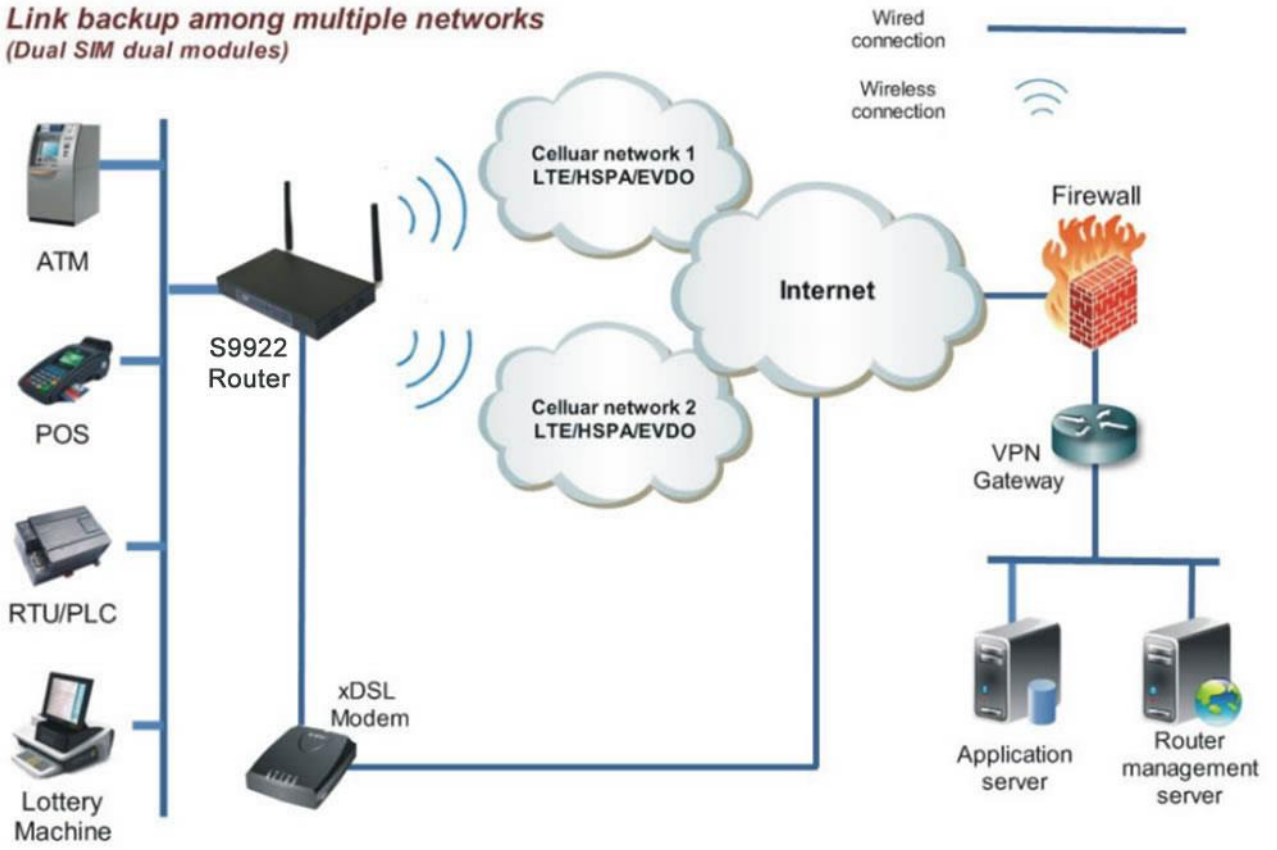
S9922 LTE Router support RICON M2M management platform. By the management platform, you can check running info of S9922 LTE Router and remote config or remote updates.

1.2 Product positioning

S9922 LTE Router widely used in Telecon, economic, advertisement, traffic, environment protection business area.

For example, in economic area, S9922 LTE Router connect server by IPSec & GRE to ensure data security, and dual module online or dual module switch online ensured network availability. All these technology ensured safe and reliable data transmission, and minimize the probability of network disconnection, and maximize the usability of economic business like ATM, POS .etc.

Figure 1-1 Network structure



1.3 Function & Features

Function

- Dual module/WAN/Wi-Fi multiple network mode backup
- VPN support, GRE over IPSec, IPsec over PPTP/L2TP.
- WAN port support PPPoE, static IP, DHCP client.

- LCP/ICMP/flow/heartbeat check, ensure network usability
- SNMP network management, NTP support
- Local & remote firmware update
- Local & remote log check
- Supports DNS proxy and Dynamic DNS (DDNS)
- Supports timing operation
- Supports LED status indication

Available cellular network

- LTE 800/900/1800/2100/2600MHz
  UMTS/HSPA+900/2100MHz
  GSM/GPRS 900/1800/1900MHz
- HSPA+/HSUPA/HSDPA/ WCDMA /UMTS 2100/1900/900/850/800MHz；
  EDGE/GPRS/GSM 1900/1800/900/850MHz
- HSUPA/HSDPA/UMTS 2100/1900/850MHz
  EDGE/GPRS/GSM 1900/1800/900/850MHz
- HSUPA/HSDPA/UMTS 2100/1900/900/850MHz
  EDGE/GPRS/GSM 1900/1800/900/850MHz
- CDMA 2000/EVDO Rev.A 800MHz
- CDMA 2000/EVDO Rev.A 800/1900MHz

1.4 Specification

Interface

- 4×10/100Mb LAN interface
- 1×10/100Mb WAN interface
- 1× RS-232 console port(RJ45)
- 2× SMA-K antenna interface
- 2× SMA-K antenna interface (Wi-Fi, optional)
- 2× Standard SIM/R-UIM interface
- 1× Standard DC power interface

Power supply

- Voltage: +5V ～+36VDC
- Dual module Idle: 204mA@12V DC
- Dual module communication: 330mA@12V DC

Others

- Dimension: 194mm x 105mm x 25mm (not including antenna)
- Weight: 540g
- Operation temperature: -30~+70℃
- Store temperature: -40~+85℃
- Related humidity: <95% (non-condensing)
- Guarantee: one year

2 Product structure

About this chapter

Chapter	Content
2.1 Hardware	S9922 LTE Router hardware.
2.2 Structure	Structure of S9922 LTE Router.

2.1 Hardware

2.1.1 Appearance & Size

Appearance

Figure 2-1 S9922 LTE Router Appearance

Size

Table 2-1 S9922 LTE Router size

Model	Dimension (mm)	Interface
S9922 LTE Router	194×105×25	4×10/100Mb LAN interface 1×10/100Mb WAN interface 1× RS-232 console port(RJ45) 2× SMA-K antenna interface 2× SMA-K antenna interface (Wi-Fi, optional) 2× Standard SIM/R-UIM interface 1× Standard DC power interface

S9922 LTE Router appearance as Figure 2-2, Figure 2-3 shows

Figure 2-2 S9922 LTE Router Figure

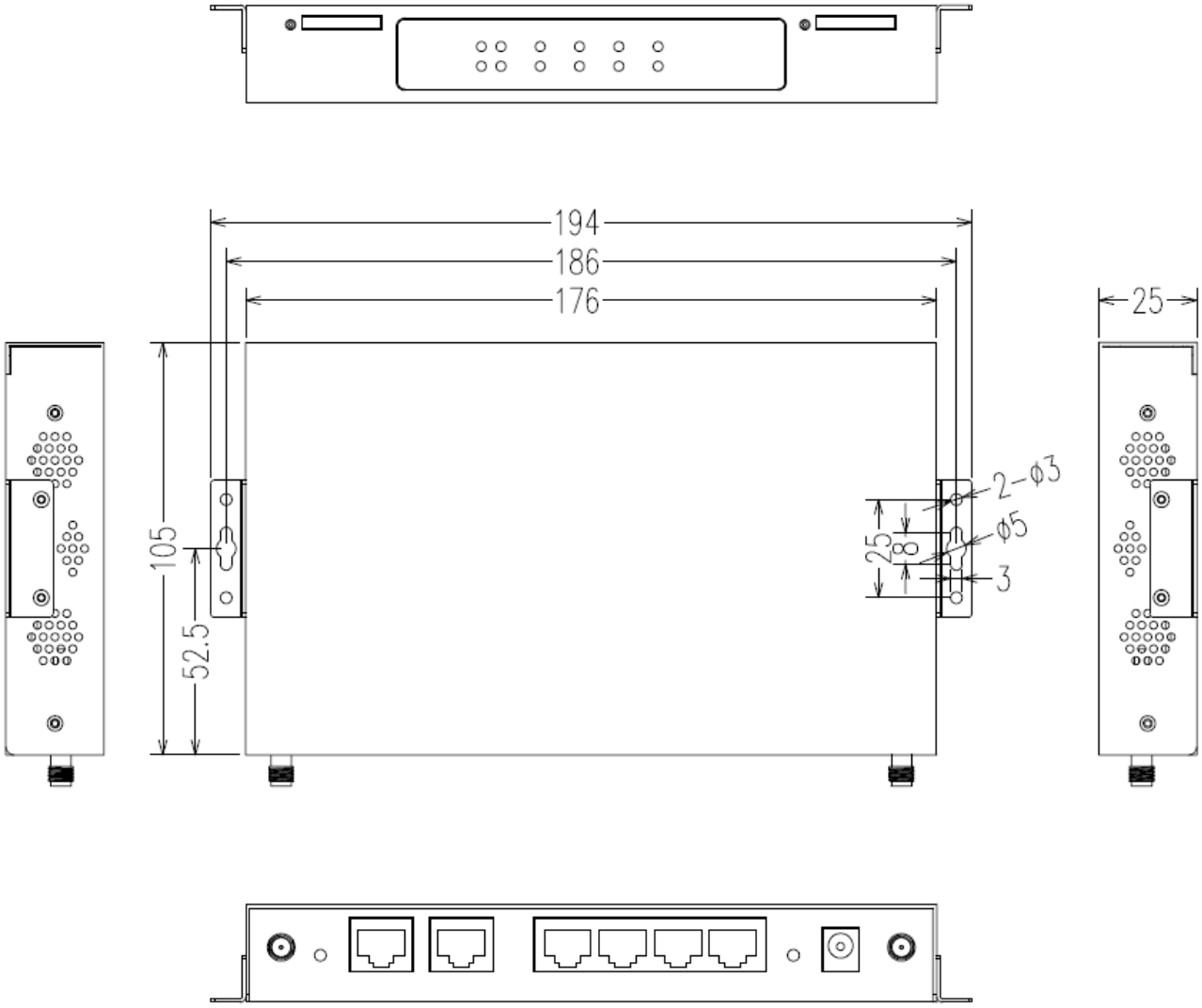
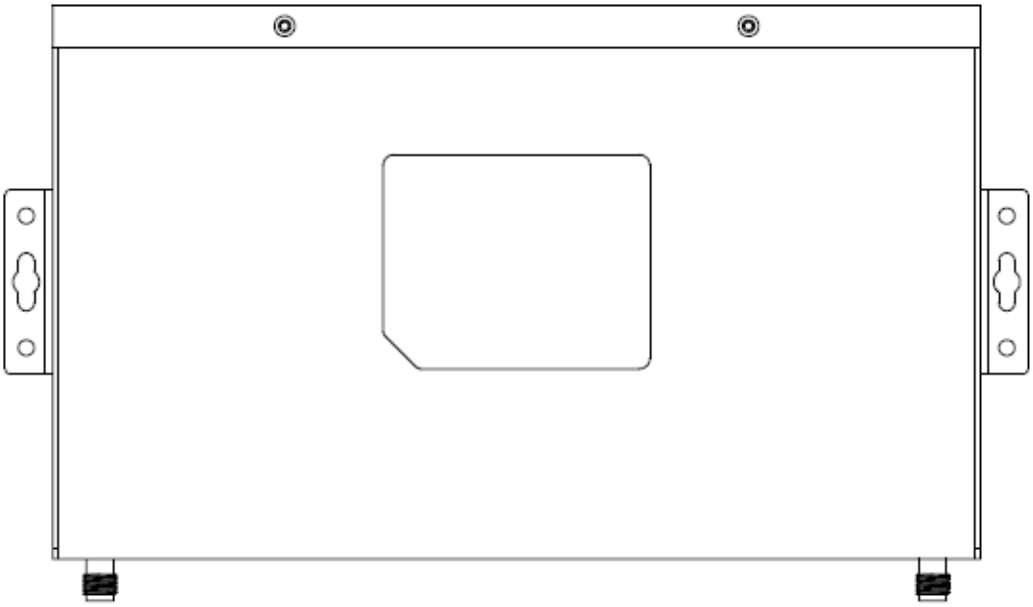


Figure 2-3 S9922 LTE Router bottom view



2.1.2 Accessories

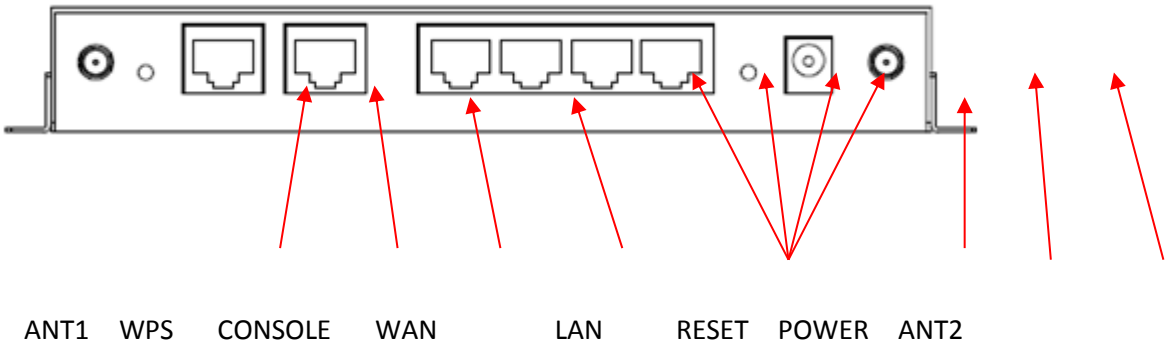
Table 2-2 S9922 LTE Router accessories

Accessories name	Number	Note
S9922 LTE Router	1 pcs	
CD-ROM	1 pcs	Optional
3G/LTE antenna	1 or 2 pcs	According to module number inside
Wi-Fi antenna	1 pcs	Optional
GPS antenna	1 pcs	Optional
RJ45 cable	1 pcs	
Mounting	1 pair	Optional
Certificate and warranty card	1 pcs	
+12V power adapter	1 pcs	

2.2 Structure

Figure 2-1 Front pannel

Figure 2-2 Back pannel



3 Installation of S9922 LTE Router

About this chapter

Chapter	Content
3.1 Unpacking	Unpack S9922 LTE Router box and the packing list.
3.2 How to install	How to install S9922 LTE Router with SIM/UIM card and Ethernet cable .etc.
3.3 Power supply	Power supply needs of S9922 LTE Router.
3.4 Review	Review

3.1 Unpacking

After received the box of S9922, please unpack it and check if all accessories complete. Please check Table 2-2 as reference.

3.2 How to install

3.2.1 SIM/UIM card install

S9922 LTE Router support dual SIM/UIM carad, so you may need insert dual SIM before config it.

CAUTION

Before install SIM/UIM card, disconnect any power resource of the router.

Step 1 Use a small stick push the yellow button on router, the SIM slot will pop out as Figure 3-1 shows.

Figure 3-1 Pop out SIM slot

Step 2 Put SIM card in slot at proper direction as Figure 3-2 shows

Figure 3-2 SIM/UIM card install.

---END

3.2.2 Ethernet cable connection

Use Ethernet port directly connect S9922 LTE Router and computer, or transfereed by a switch.

3.2.3 Serial port connection

When you connect S9922 LTE Router to serial port on lattop or ther deivec, to do this, you need a serial port to RJ45 cable, this cable is optional. One end connect to computer serial port, the other end connect the console port on S9922.

Table 3-1 Serial port to RJ45 cable

Item	RJ45(male)	TO	DB9(Female)
PIN	2		2(RxD)
PIN	3		3(TxD)
PIN	5		5(GND)

CAUTION

- When “DTU” function is not added to device, this port for debug only, not for other application. When “DTU” function is added to device, be shown under “Application” section on web GUI, this port is for DTU only, not for debug.
- The cable for debug and DTU data transmission is with the same order.
- Do not insert any other RJ45 cable into console port, otherwise router may work abnormal.

3.3 Power supply

In order to get high reliability, S9922 LTE Router adapt wide voltage input: +5V～+36VDC, support hot plug and complex application environment.

3.4 Review

After connect SIM/UIM card, Ethernet cable, necessary antenna, then connect power cable.

CAUTION

Please connect antenna before connect power cable, otherwise because of Impedance mismatching, signal maybe poor.

Notice

Step 1 Check antenna connection.

Step 2 Check SIM/UIM card installation to confirm SIM/UIM card is available.

Step 3 Power on S9922 LTE Router, the LEFT SIM slot is SIM 1, take it as a example:

- After connect power 14s, router RUN solid light, means router system works ok.
- After connect power 25s, NET solid light, means router found the module.
- After connect power 25s, NET blinking quickly means router start to dial.
- After connect power 30s, RF shows the signal level.
- After connect power 45s, NET solid light means 3G/LTE connected, if blinking slowly, means 2G/2.5G connected.

4 Before config

About this chapter

Chapter	Content
4.1 LED Status	The meaning of LED status.
4.2 Local config	How to local config S9922 LTE Router.

4.1 LED Status

There are LED on front panel of S9922 LTE Router, they show how S9922 LTE Router works.

Table 4-1 LED instruction

LED name	Status
RUN	• Solid light: system normal • Dark: system abnormal or during booting
WAN	• Solid light: connect ok • Blinking: data sending/receiving. • Dark: no connection.
LAN1～4	Same as WAN status.
RF1～2	• Solid light: good signal, 21～31 • Blinking quickly (0.5s): normal signal, 11～20 • Blinking slowly(2s): bad signal, 1～10 • Dark: no signal
NET1～2	• Solid light: connect 3G/LTE ok • Blinking slowly(0.5s): connect 2.5G network ok

LED name	Status
	• Blinking quickly(2s): dialing • Dark ： No module or no auto-dial

4.2 Local config

Precondition

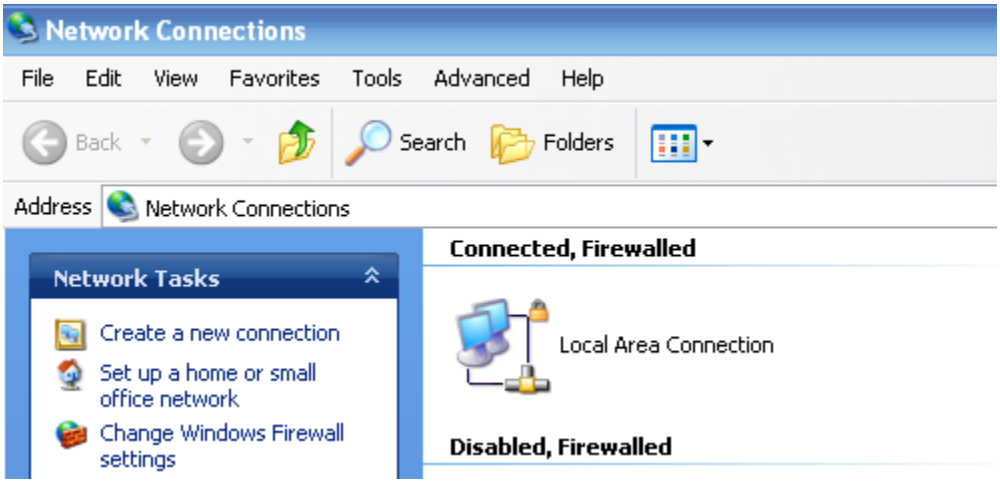
- Already power on S9922 LTE Router
- Ethernet cable connect to S9922 LTE Router

You could specify a static IP or DHCP get IP for your computer.

Static IP

Step 1 Click “start > control panel”, find “Network Connections” icon and double click it to enter, select “Local Area Connection” corresponding to the network card on this page. Refer to the figure below.

Figure 4-1 Local Area Connection



Step 2 Obtain a IP address automatically, or follow below instruction.

NOTE

S9922 Router default enabled DHCP server. If it has been disabled, DHCP cannot be use.

Step 3 Change or add a IP 192.168.8.* on your computer

Figure 4-2 Connection properties

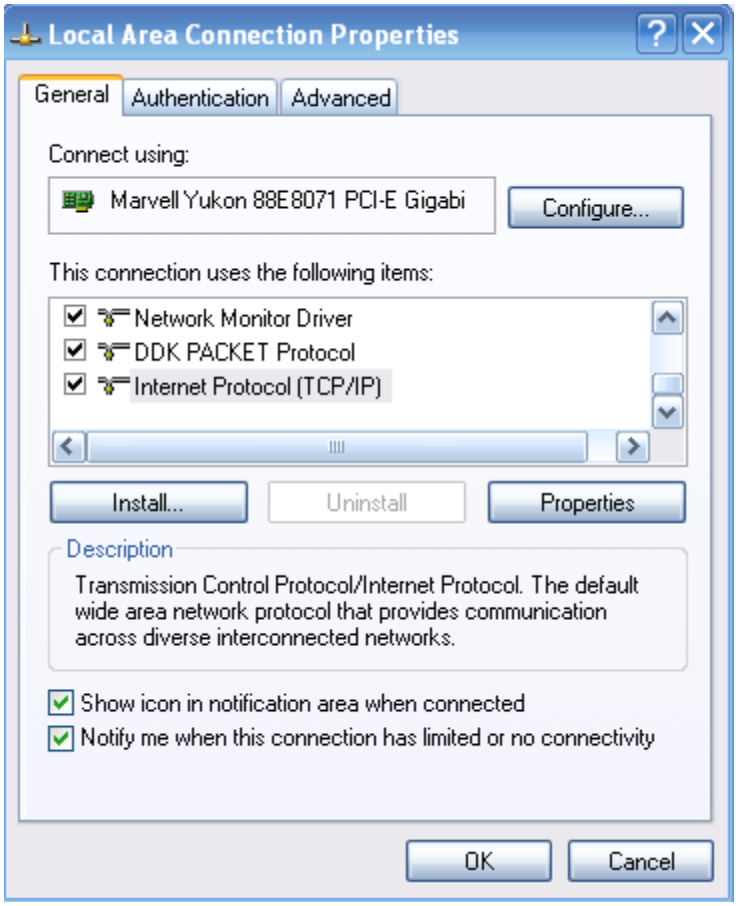
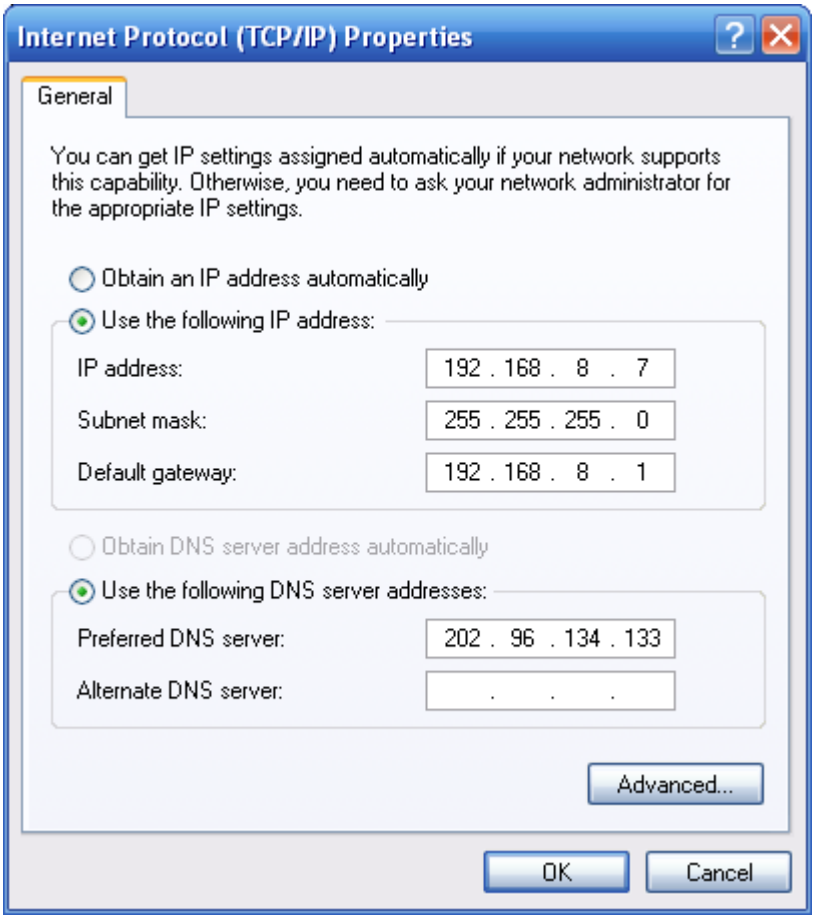


Figure 4-3 Internet protocol (TCP/IP)


Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address: 192 . 168 . 8 . 7
Subnet mask: 255 . 255 . 255 . 0
Default gateway: 192 . 168 . 8 . 1
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server: 202 . 96 . 134 . 133
Alternate DNS server:
Advanced...
OK
Cancel

You could change your IP address or add a IP address in Adcanced setting.

- General configuration

This method will temporarily interrupts the communication between the computer under configuration and LAN, and the specific parameter configuration is shown as below:

IP address: 192.168.8.* (*indicates any integral between 2 to 254)

Subnet mask: 255.255.255.0

Default gateway: 192.168.8.1

Remember:

S9922 Router LAN port factory default parameter:

IP address: 192.168.8.1;

Subnet mask: 255.255.255.0

S9922 Router factory default login parameter:

Management interface login IP address: 192.168.8.1

Login name: admin

Login password: admin

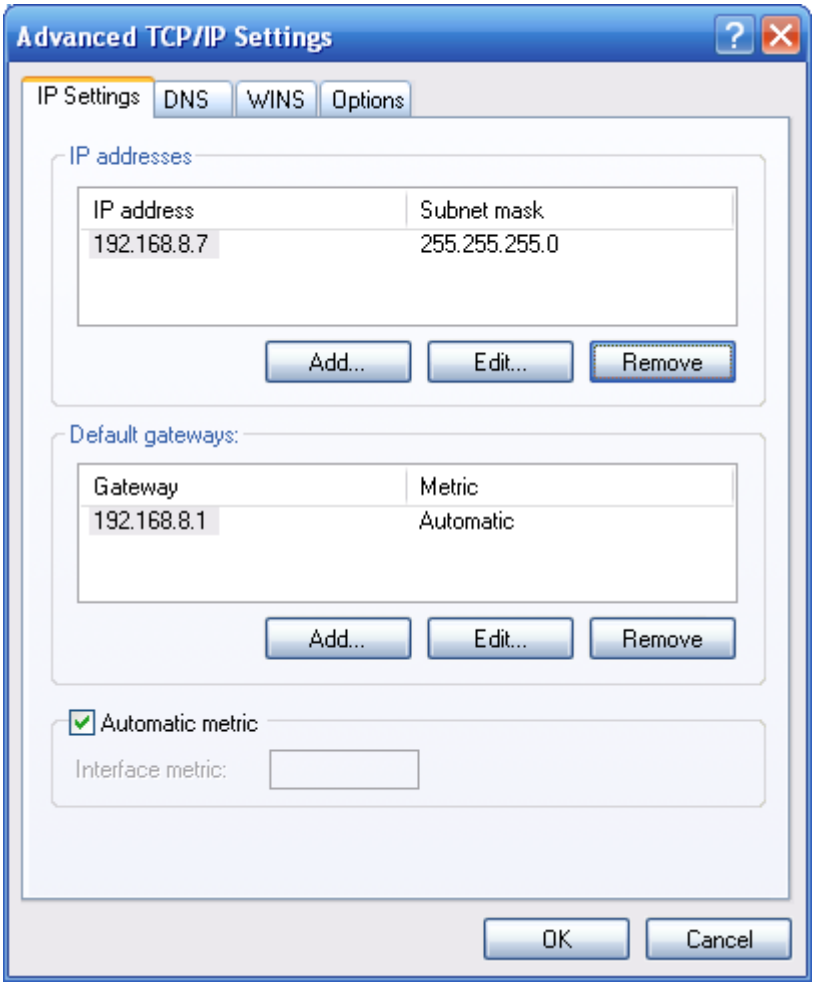
- Advanced configuration

If you don't want to interrupt local PC LAN communication and configure S9922 Router when the former network configuration exists, it is required add route (IP).

The configuration operation is shown as below:

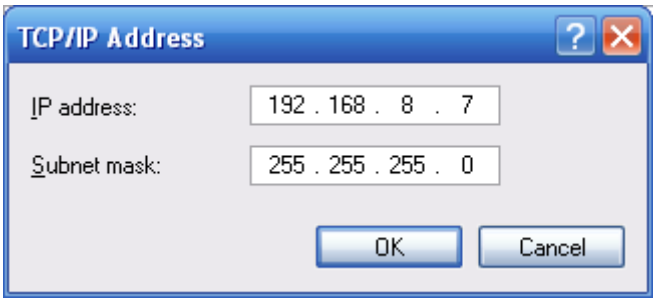
Click the "Advanced…"button to enter the interface as below:

Figure 4-4 Advanced TCP/IP Settings



Click the "Add (A)"button under the "IP address (R)", and fill in the IP address that you want to add:

Figure 4-5 TCP/IP address



After the configuration is completed, click the "Add". By now the computer has a route to S9922.

Note:

"Default gateway" depends on whether the configuration computer connects with Internet through original local network configuration. If Internet is accessed through original local network, the default gateway setting does not need to be modified; if S9922 Router is used, you need to modify the default gateway and configure it as S9922 Router's default LAN IP address 192.168.8.1.

---END

Network Check

Step 1 IP configuration check

Use the command of ipconfig to check whether the IP address is correctly set or added. You can enter DOS mode and key-in command: ipconfig, for instance:

C:\>ipconfig

Windows IP Configuration

Ethernet adapter local connection:

Connection-specific DNS Suffix. :

Auto configuration IP Address . . .: 192.168.8.7

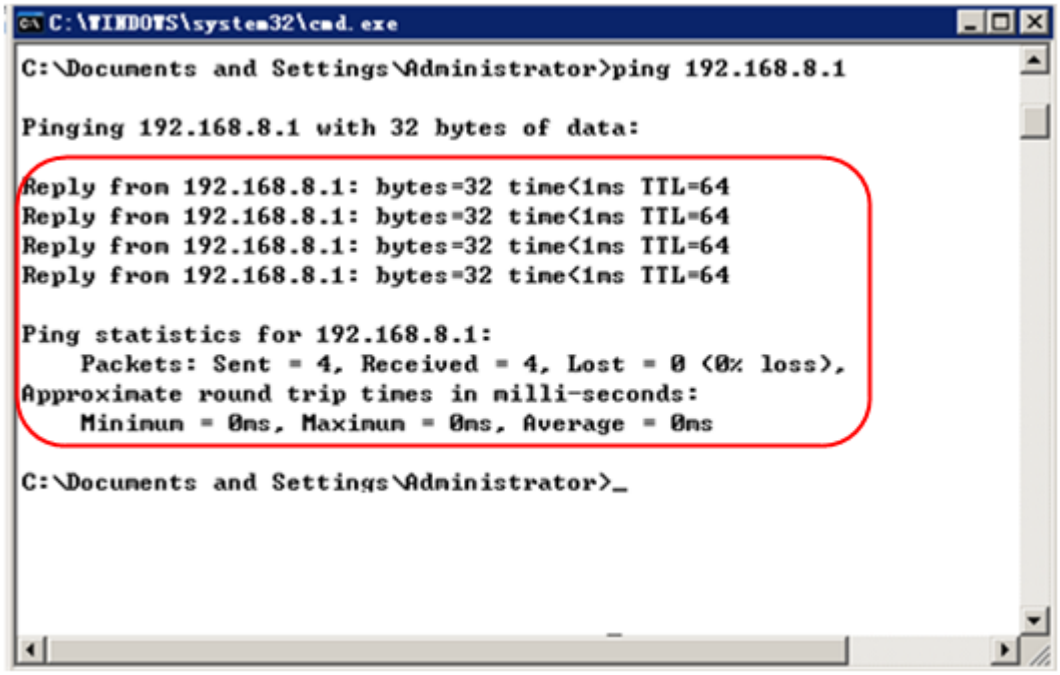
Subnet Mask . . . . . .: 255.255.255.0

Default Gateway . . . . . : 192.168.8.1

Step 2 Connectivity check

After the configuration is completed, you can check the connectivity between it and S9922 3G Router by ping command. Key-in ping command in system command line:

Figure 4-6 Connectivity check


C:\WINDOWS\system32\cmd.exe
C:\Documents and Settings\Administrator>ping 192.168.8.1
Pinging 192.168.8.1 with 32 bytes of data:
Reply from 192.168.8.1: bytes=32 time<1ms TTL=64
Reply from 192.168.8.1: bytes=32 time<1ms TTL=64
Reply from 192.168.8.1: bytes=32 time<1ms TTL=64
Reply from 192.168.8.1: bytes=32 time<1ms TTL=64
Ping statistics for 192.168.8.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\Documents and Settings\Administrator>_

By now, it means that the configuration computer has been connected to the router. You can carry out configuration operation on it.

---END

5 Router config

About this chapter

Chapter	Content
5.1 Overview	Enter S9922 Router WEB GUI to config
5.2 Basic config	Basic config & function
5.3 Application	Advanced function of router like timing operation, link backup .etc.
5.4 Security	Security setting of S9922
5.5 Forward	NAT & DMZ setting
5.6 VPN	PPTP, L2TP, IPSec & GRE setting.
5.7 System	Updating & maintain
5.8 Status	Router working status.

5.1 Overview

S9922 LTE Router adopts WEB GUI to cofig, all parameter can be modified by this GUI, and it is easy to understand.

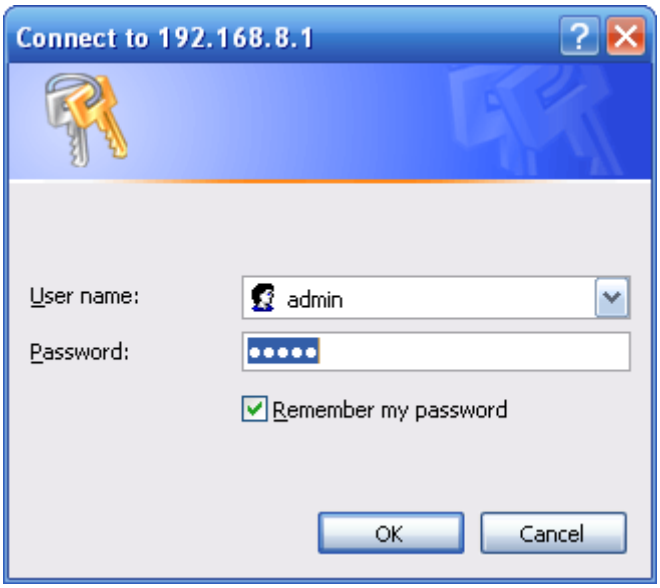
5.2 Basic config

Through this chapter, you could achieve basic function: visit internet

5.2.1 Login WEB GUI

Step 1 Run a Internet Explorer and visit “http://192.168.8.1/”, to enter identity page

Figure 5-1 User identity page



Step 2 User should use default user name and password when log in for the first time:

User name: admin

Password: admin

---END

5.2.2 Network config

Network connection config, including LAN, WAN, cellular network, Wi-Fi(optional), parameter switch, DHCP setting.

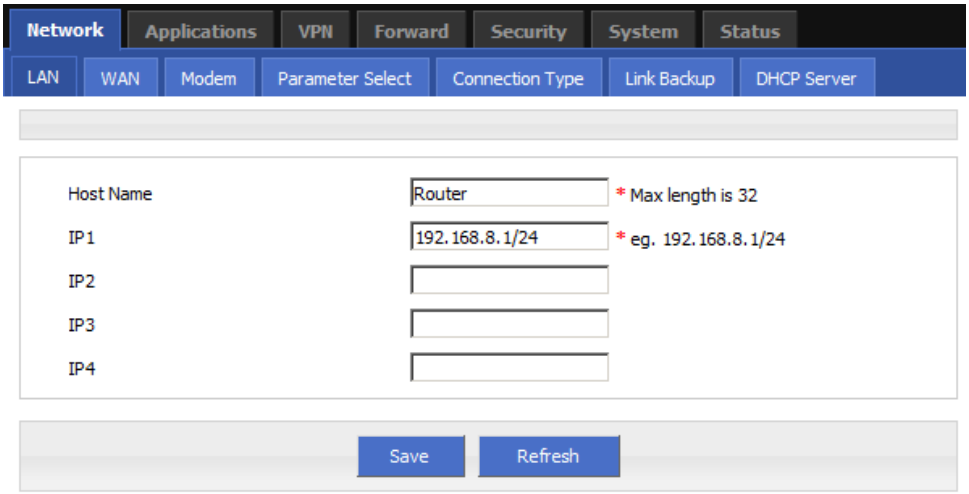
LAN

LAN setting used to manage local area network PC which connect to S9922, make them could visit internet and the network segment connectivity normal.

Step 1 Login S9922 WEB GUI

Step 2 Single click “Network > LAN”.

Figure 5-2 LAN window



Step 3 LAN parameter .

Table 5-1 LAN Parameter instruction

Parameter	Details	Operation
Host name	router name	Manual input, Maximum length limited to 32 word type character
IP1～4	Divide sub-network, those sub-net could communicate.	Manual input Format： A.B.C.D/Mask IP1 default： 192.168.8.1/24

Step 4 Single click “save” icon, done.

After change the LAN IP, if page has no response anymore, please make sure your PC address is in the same network segment, or set a new IP to your PC to insure that.

---END

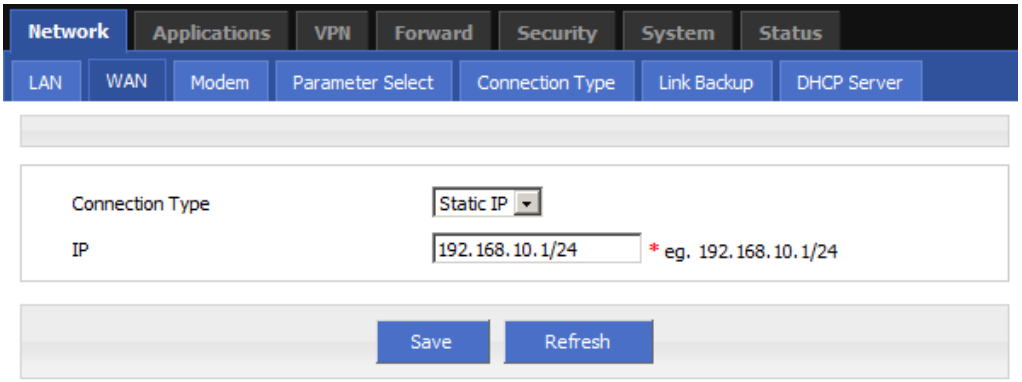
WAN

Wired connect to Internet by static IP, DHCP or PPPoE

Step 1 Login S9922 WEB GUI

Step 2 Single click “network > WAN”

Figure 5-3 WAN window



Step 3 WAN connection type

Table 5-2 WAN connection type parameter instruction

Parameter	Details	Operation
Connection Type	WAN Connection Type	DropDownList Selection: • Static IP: Manual set WAN IP, if set static IP, need manual set gateway, DNS.etc. • DHCP: DHCP get IP address • PPPoE: PPPoE dial to get IP, usually you need connect to a ADSL modem

Step 4 Single click “save” icon.

---END

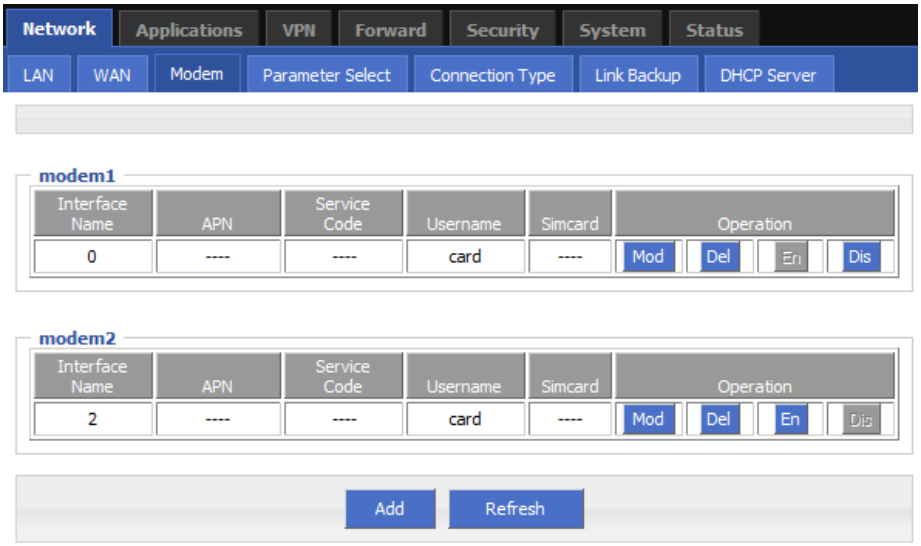
Modem

S9922 Router core function, connect Internet by cellular modem, S9922 Router support single modem single SIM, single modem dual SIM, dual modem dual SIM, those three working type provide internet connection to customers. Usually 3G network bandwidth is 1～5Mbps, 3.5G up to 20Mbps and LTE up to 100Mbps

Step 1 Login S9922 WEB GUI

Step 2 Single click “network > Modem”.

Figure 5-4 Modem window

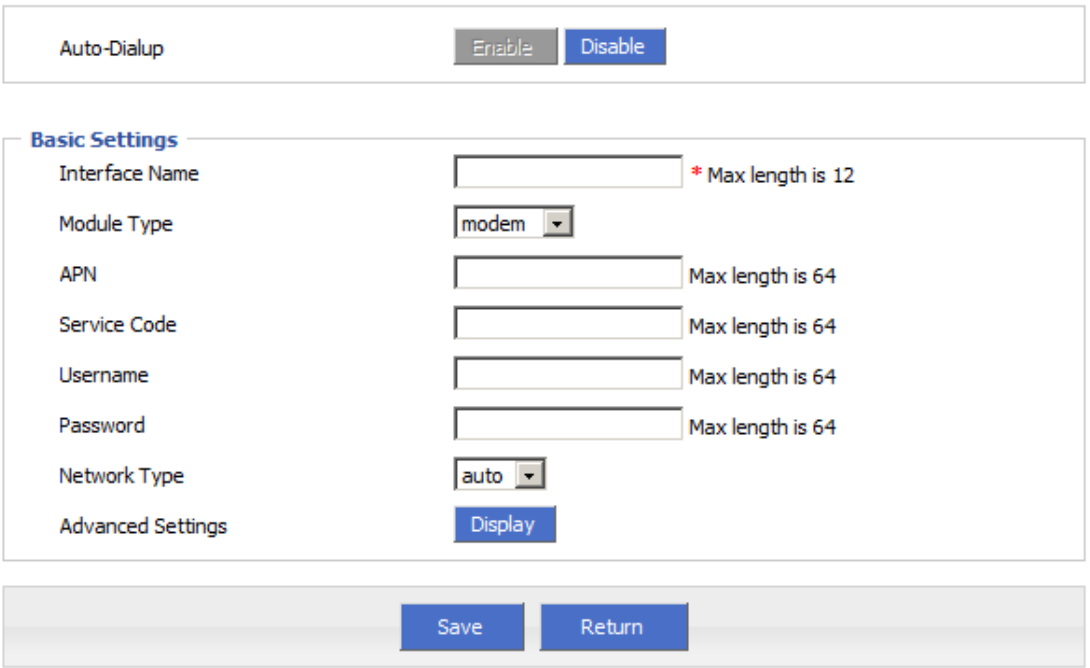


Step 3 Operation:

- add

1. Single click “add”, window shows like below

Figure 5-5 Modem page



2. Input suiable parameter

Table 5-3 “Modem” Parameter instruction

Parameter	Details	Operation
Auto-dialup	Auto-dialup current modem, if all modem auto-dialup disabled, router will not auto-dialup	• Enable • Disable
Module type	If your router has dual cellular module inside, you could choose which module to use here.	DropDownList • modem • modem2 • If your router has only one module, no such option.
Interface Name	Interface name, to identify this interface	WORD type, up to 12 characters
APN	APN, provided by local ISP, usually CDMA/EVDO network do not need this parameter	WORD type, up to 64 bytes
Service code	Usually *99***1#, CDMA/EVDO: #777.	CODE type, up to 64 bytes
Username/Password	Provided by ISP	WORD type/CODE type, up to 64 bytes
SIM	Only Single module dual SIM router has this option, used to select SIM card	• SIM1 • SIM2
Network type	Network type force to 2.5G or 3G/LTE.	DropDownList WCDMA: • auto • wcdma • edge EVDO: • auto • evdo • cdma LTE, HSPA+ module force 3G means 3G/LTE auto, AUTO means 2.5G/3G/LTE auto

Parameter	Details	Operation
Advance Setting	PPP process advcanced parameter, do not suggest to modify the setting. If necessary, contact us for support	Single click to show advanced setting
Authentication (need match server end, default auto-negotiation)		
CHAP	Challenge-Handshake Authentication Protocol, a way to send real password when build ppp link, improved security.	• Disable • Negotiation CHAP is prior to PAP
PAP	Password Authentication Protocol	• Disable • Negotiation
MS-CHAP	MS-CHAP MicrosoftChallenge-Handshake Authentication Protocol Based on MPPE	• Disable • Negotiation
MS2-CHAP	MS-CHAP second version	• Disable • Negotiation
EAP	PPP Extensible Authentication Protocol	• Disable • Negotiation
Compress (need match server end, default disable)		
Compression Control Protocol	Negotiate which compress control protocol used on PPP link	• Disable • Negotiation
Address/Control Compression	Whether compress IP address	• Disable • Negotiation
Protocol Field Compression		• Disable • Negotiation
VJ TCP/IP Header Compress		• Disable • Negotiation
Connection-ID Compression		• Disable • Negotiation
More		
Debug	Enable PPP dialing log, default value is enable, in order to check more info about dialing, suggest no changing.	• Disable • Negotiation
Peer's DNS	Auto get peer DNS when PPP dialing.	• Disable

Parameter	Details	Operation
	DNS is necessary if want visit domain name. In order to forbid LAN pc visit domain name, you may disable it.	• Negotiation
LCP interval/Retry	After PPP dialing succeed, LCP is needed to keep PPP link alive. Also it could used to quickly spot network interrupt and reconnect.	Value area : 1～512 Unit: second Default value: 30/5
MTU	the number of bytes of the maximum transfer unit by PPP interface, sometimes financial data has request on this.	Value area : 128～16364 byte
MRU	the number of bytes of the maximum receive unit by PPP interface, sometimes financial data has request on this.	Value area : 128～16364 byte
Local IP	Set the local IP address when PPP dialing, need ISP support	A.B.C.D, Example: 10.10.10.1
Remote IP	Set the remote IP address when PPP dialing, need ISP support	A.B.C.D, Example: 10.10.10.254
Professional	• nomppe. • mppe required • mppe stateless • nodeflate • nobsdcomp • default-asyncmap	Do not suggest modify, please contact us for help if necessary.

Figure 5-6 Single module single SIM/dual module dual SIM

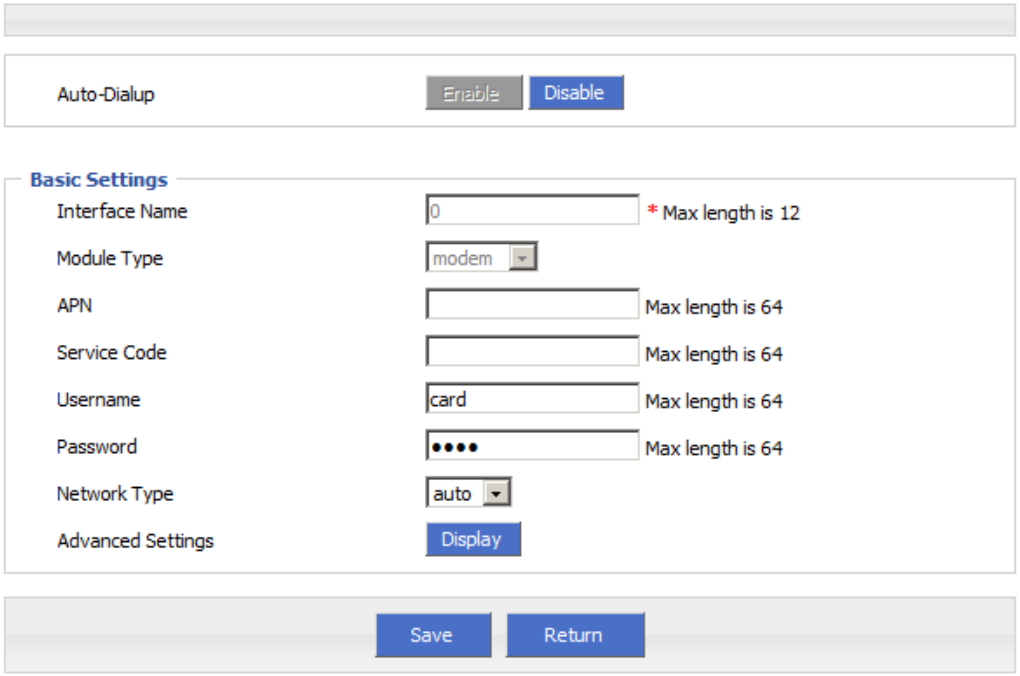


Figure 5-7 Single module dual SIM

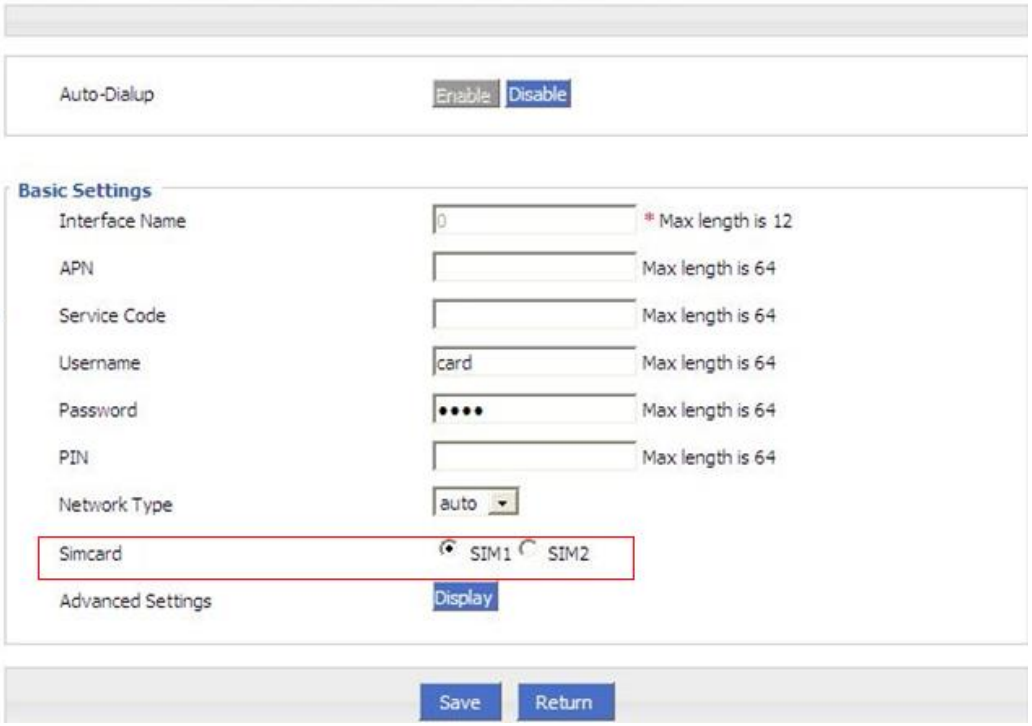
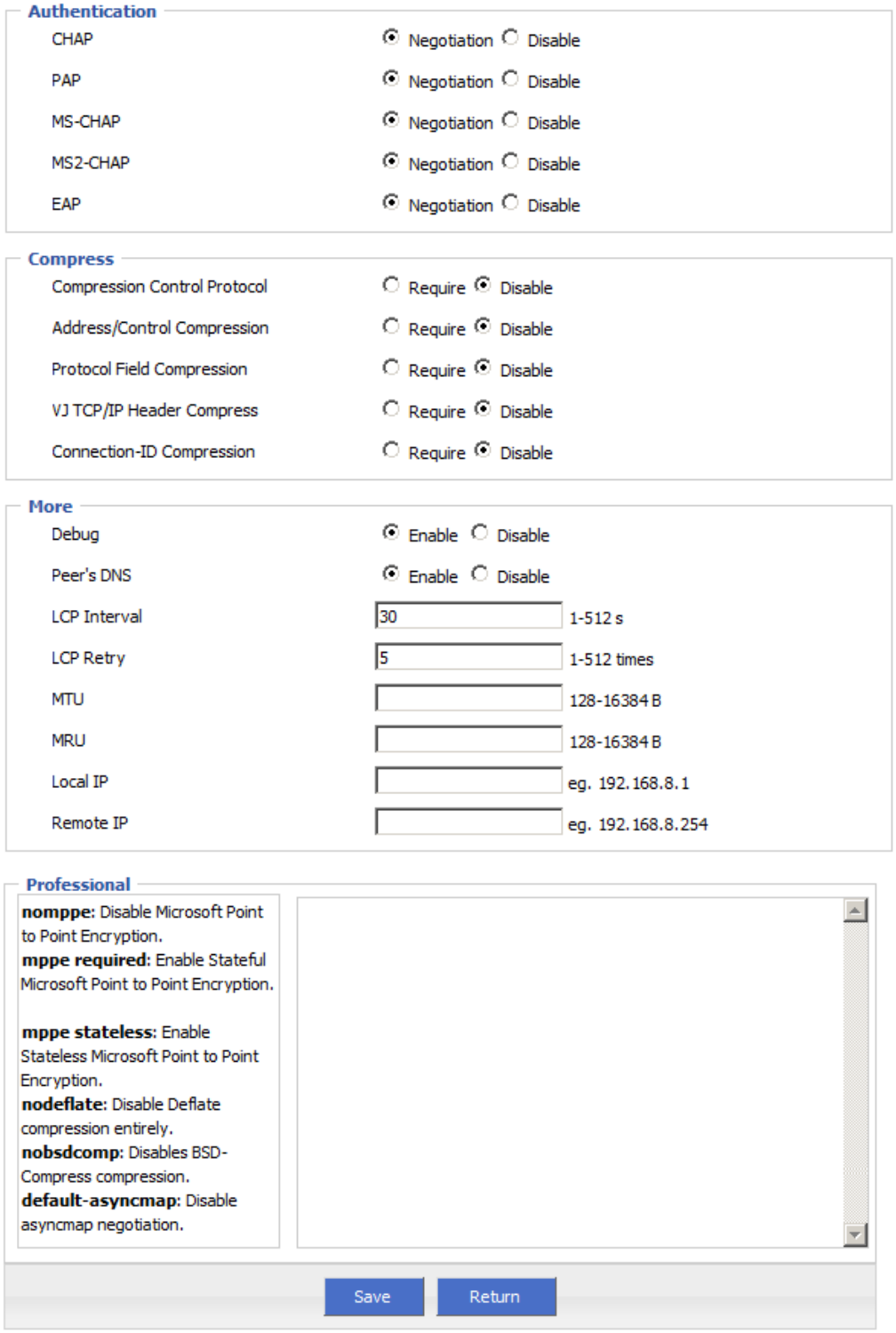


Figure 5-8 Advanced setting



3. Single click “save” icon to finish.

NOTE

Grey icon means enabled.

---END

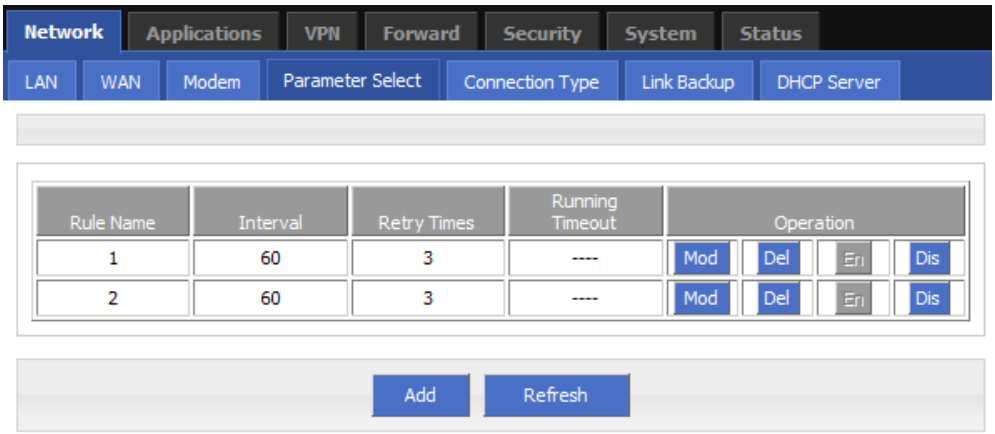
Parameter select (Recommend to Single module dual SIM version)

Router parameter select function is used for multi-function switch, like VPN parameter switch, SIM parameter switch, multi-sever switch .etc. You could pre-config several network parameter and switch between them, to achieve multiple Teloecom operator backup. This function also could switch VPN setting, for example, when modem 1 online it connect VPN 1, modem 2 online it connect VPN server, they cannot connect at same time because conflict, by this function you could easily switch when network failure.

Step 1 Login S9922 WEB GUI

Step 2 Single click “Network > parameter select”.

Figure 5-9 parameter select



Step 3 Add, modify, del, enable and disable the parameter select rule

- add

Figure 5-10 add rule

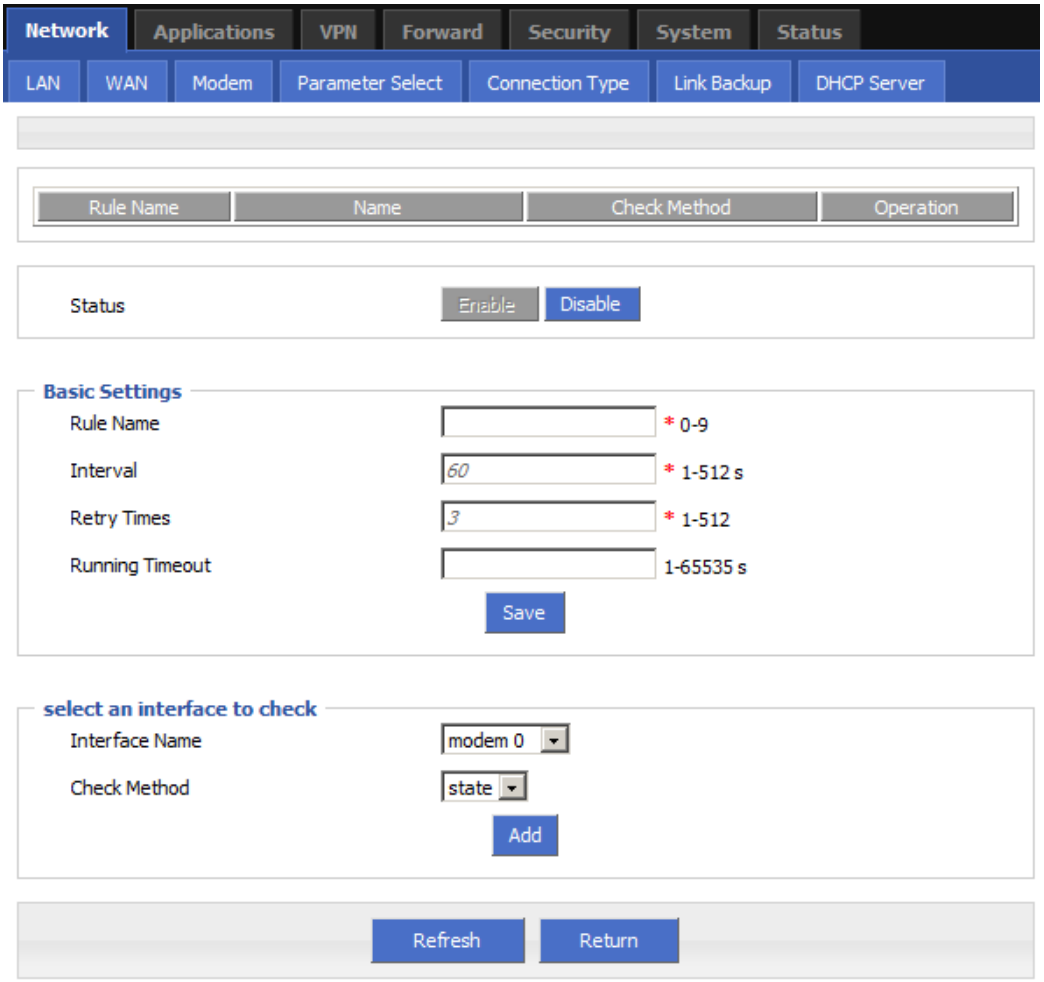


Table 5-4 Parameter instruction

Parameter	Details	Operation
Status	For enabled rule: Only one rule is running at one time, when it check failed, next rule start running. For disabled rule: all related interface also disabled.	• Enable • Disable
Basic settings		
Rule name	Name value decided running order	Value area ：[0,9]
Interval/RetryTimes	Check interval and retry time, if all check failed, switch to next rule	Value area ：1～512 Units: seconds/time Default: 60/3
Running timeout	Not available for rule 0	Value area ：1～65535

Parameter	Details	Operation
	This parameter restrict current rule running time, when timeout, switch to rule0, if do not set, switch to next rule	Units: seconds
Select a interface to check		
Interface name	Set related modem interface	DropDownList to choose, current available option will show below
Check method	If state, router will check link state. If ICMP, router will ping the ICMP IP address to check	DropDownList • state • icmp

CAUTION

This function is control how the router online & offline, and use which modem to online. Please notice timing task is execute a operation and keep the status, but parameter select only execute a operation. So they do not conflict

But Link backup function may conflict with parameter select function , if you set both, final running result may not as you presume.

---END

Connection type

Step 1 Login S9922 WEB GUI

Step 2 Single click “Network > Connection type”.

Figure 5-11 Connection type window

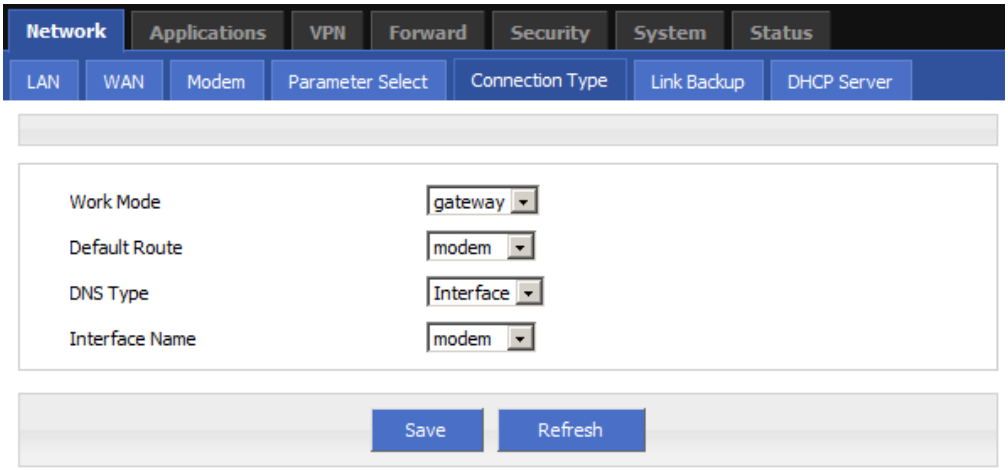


Table 5-5 Connection type Parameter instruction

Parameter	Details	Operation
Work mode	Gateway: IP data transfer with MASQ Router: all IP data just transfer, no MASQ Default Gateway, do not suggest to change	DropDownList • gateway • route
Default route	Default route	DropDownList
Gateway	If default route is wan static IP, need specify gateway and DNS	Example: 192.168.10.254
DNS type	If Interface, will get DNS automatically	DropDownList • interface • custom
DNS1/DNS2	Manual set DNS	Example: 8.8.8.8
Interface name	Router will get DNS address from this interface	DropDownList • modem • modem2 • eth0

Step 3 Single click “save” icon.

---END

Link Backup

This function used to set how to backup network among modem1, modem2, and WAN port, to secure network availability.

There are hot backup and cold backup, hot backup means the backup link will always connected, so switch time is less, but cost extra flow fee..

Step 1 Login S9922 WEB GUI

Step 2 Single click “network > Link Backup”.

Figure 5-12 Link Backup

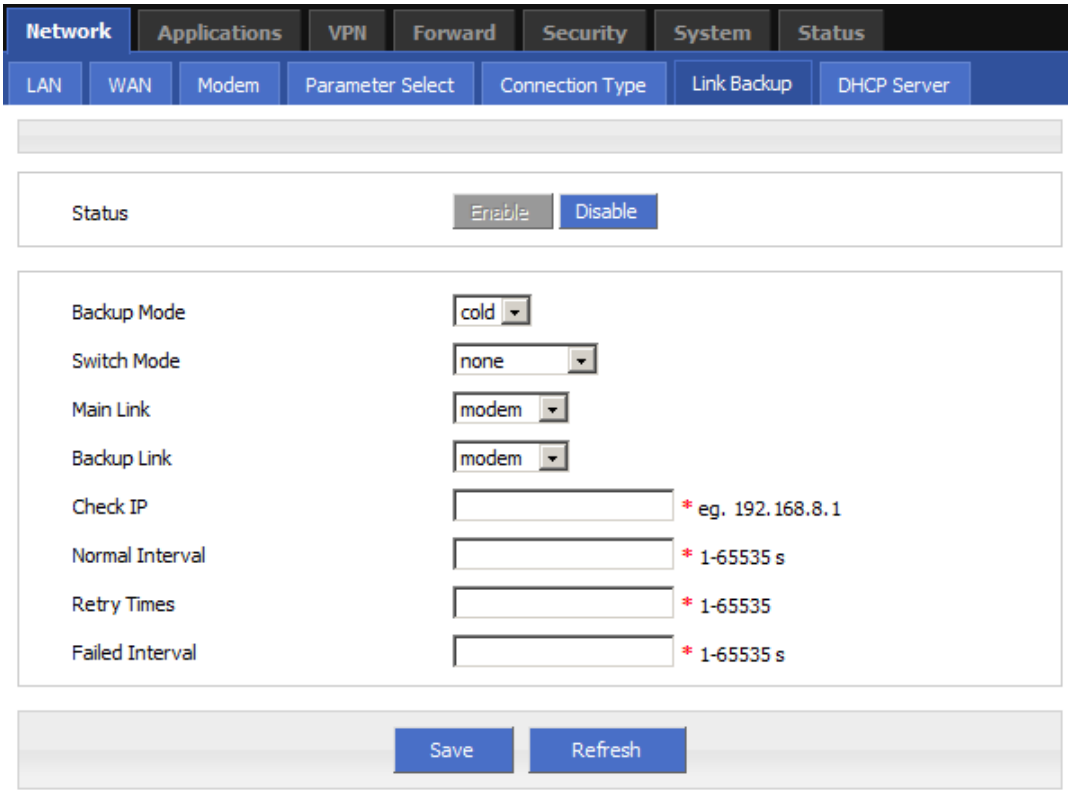


Table 5-6 Link Backup Parameter

Parameter	Details	Operation
Status		• Enable • Disable
Backup Mode	Hot: main and backup link both connected. Cold: backup link only connected when main link failed.	DropDownList • cold • hot

Parameter	Details	Operation
Switch mode	• None: Main link down, switch to backup, Main link recover, switch back immediately. • Timeout: Main link down, switch to backup, after timeout time, switch back. • Interbackup: Current link down, switch, no main link.	DropDownList • none • timeout • interbackup
Main Steady time	Router will check main link, only it is steady over this setting time, router consider main link is normal.	Value area: 1～65535 Units: seconds
Backup least time	Router will work on backup link time at least this setting time. This setting prior to Main Steady time.	Value area ：1～65535 Units: seconds
Main link	No use when interbackup	DropDownList • modem • modem2 • wan
Backup link	No use when interbackup	DropDownList • modem • modem2 • wan
Check IP	Router will PING this IP to check network	
Normal Interval/Retry time	Check interval and retry time, if arrived retry time, link down	Value area ：1～65535 Units: seconds/time
Failure interval	If link normal, ICMP check by normal interval, if PING no response, ICMP check by failure interval to fast check link, suggest set 3～5s.	Value area ：1～65535 Units: seconds

Step 3 Single click “save” icon.

---END

5.3 Application program configuration

Based on years of customers experience for different applications, besides SNMP, DDNS, S9922 4G Router has developed many functions for wireless network equipment, such as ICMP check, interface flow check function, M2M terminal management function, task management function and waking on demand function.

5.3.1 ICMP check

There is fake link (can get IP after dialing, but cannot link to destination address). Usually LCP is used to avoid this. Besides LCP, S9922 4G router can use another more reliable checking way ICMP which check the link by PING. When abnormal link is checked, the preset action will be executed to recover the link and systems quickly. Initially ICMP is to check wireless link, and now it can be used to check VPN link and supports simultaneous check in different rules. It supports maxmum 10 ICMP check rules.

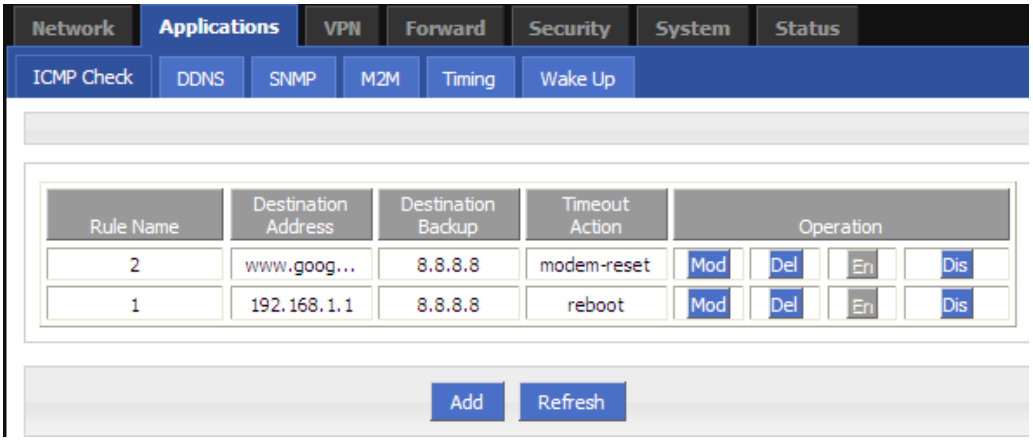
Step 1 Log on WEB GUI of S9922 4G Router.

See “5.2.1 Login WEB GUI”

Step 2 Click “applications > ICMP Check”.

Open “ICMP Check” tab.

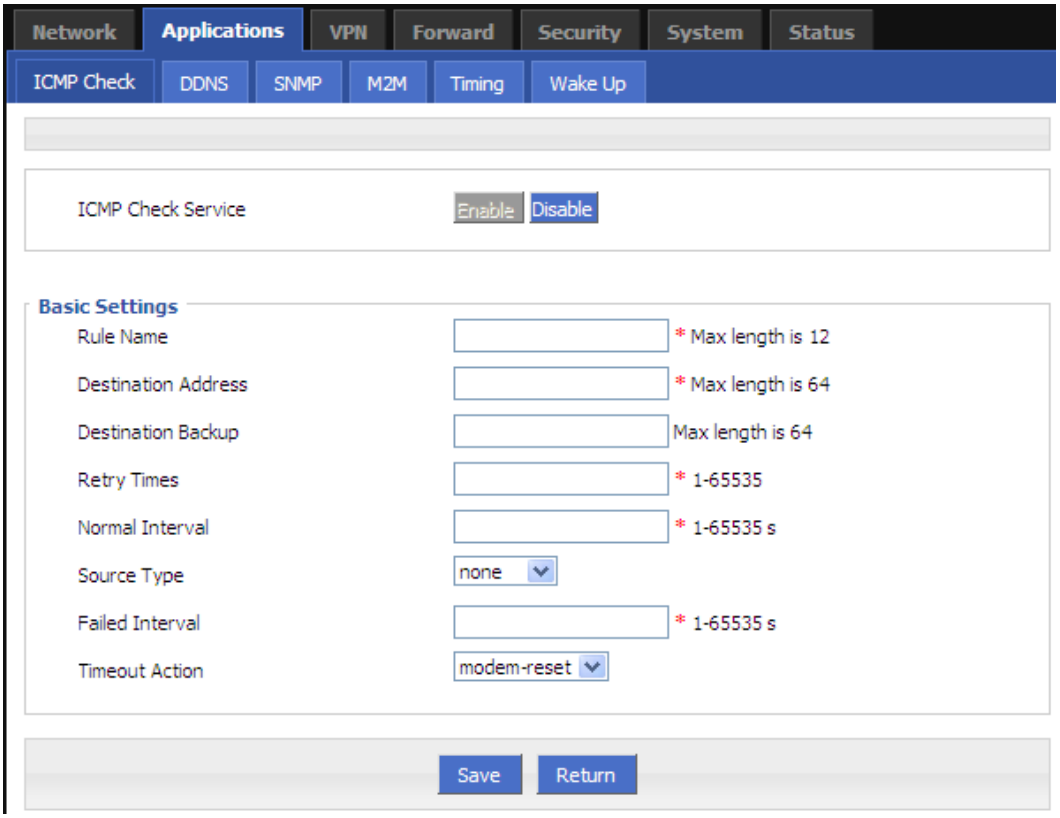
Figure 5-13 ICMP Check tab



Step 3 “Add”, “Modify”, “Delete”, “Enable” “Disable” the function of “ICMP Check”.

- Add

Figure 5-14 ICMP adding page



2. Configure the ICMP check parameter.

Table 5-7 ICMP check rules Parameter instruction

Parameter	Details	Operation
ICMP check service	To enable or disable ICMP check rules, multiple rules can be used simultaneously, and one specific rule can be disabled.	Button • Enable • Disable
Basic Config		
Rule Name	ICMP Check rule name, just to distinguish different rules	WORD type, max 12 byte,
Destination address	Destination address of ICMP check, can be domain name and also canbe IP address. If domaine name, DNS of the router shall be configured correctly.	WORD type, max 64 byte,

Parameter	Details	Operation
Destination backup	A backup destination address of ICMP check, if “destination address” cannot be linked by ICMP check, the “destination backup” address will be cheched, if still cannot linked, the router will recongnize ICMP check fails.	WORD type, max 64 byte,
Retry times/normal interval	Check time interval and max check failure times when link is OK, if check failure times reaches the max times, then “timeout action ” will be executed, e.g “modem reset”.	Value area ：1～65535 Unit: second/time
Source type	Sometimes, the checked address is not a public address, e.g a subnet of VPN. In case of this, the subnet address should be the source address of PING, and then the host machine of the subbet can be linked by PING.	DropDownList: • none • br0 • modem • modem2 Default is none, which means there is no source addess of PING. Please be noted if both modules are on line, usually source address policy routing shall be added when modem interface is chosen as source address.
Source IP	When souce type chooses “custom”, Source IP must be IP address of an interface of the router. This case is usually used if an interface cannot be chosen in checking TUNNEL.	Interface type A.B.C.D,see
Failed interval	This is a special checking method of our company in ICMP checking. If link is normal, normal interval is used in ICMP check. If abnormal, failed interval is used to check the failed link quickly. Usually failed interval is suggested 3-5s.	Value area ：1～65535 Unit: second

Parameter	Details	Operation
Timeout action	An action when check failure times reach max failure times. Can be modem-reset, reboot, custom.	DropDownList options • modem-reset：modem redials • modem2-reset：modem2 redials • reboot：router reboots • custom：customized action
Run commands	If “Timeout action” is “custom”, this shall be comfigured. Commands are BGO operation. It is not suggested to use, if need, pls contact our technical engineers.	WORD type, max 64 byte,

3. Single click “save” to finish a ICMP check rule.

NOTE

If ICMP is normal, ICMP packet is sent at “normal interval”. When abnormal, packet will be sent continuously at “failed interval”. If “destination address” cannot be linked and checking times reach “retry times”, “destination backup” will be checked. if “destination address” can be linked in checking “distination backup”, “destination address” will be checked again. If “destination backup” cannot be linked and checking times reach “retry times”, “Timeout action” will be executed.

- Modify
- Delete
- Enable

NOTE

If already enabled, the button “EN” is gray.

- Disable

NOTE

If already disabled, the button “DIS” is gray

- Refresh

  Click “refresh” to refresh the page.

---END

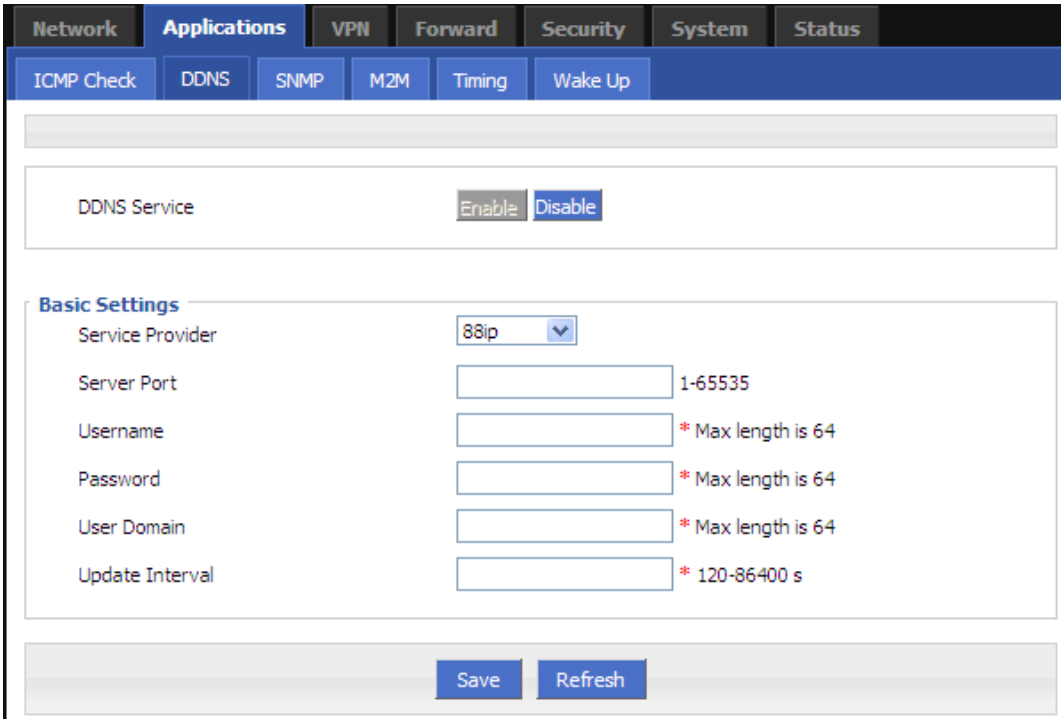
5.3.2 DDNS configuration

Network of SIM/UIM shall be a public address so that router can be visited for a DDNS.

Step 1 Log on WEB GUI of S9922 4G Router.

Step 2 Click “Applications” > “DDNS”

Figure 5-15 DDNS configuration



Step 3 Comfigure DDNS parameter.

Table 5-8 DDNS Parameter instruction

Parameter	Details	Operation
DDNS Service	Set whether enable DDNS service function	Button • Enable • Disable
Basic Config		
Service Provider	Select the DDNS service provider that router currently supports, don’t support other providers.	DropDownList options • 3322 • 88ip • Dnsexit • Dyndns • Zoneedit • changeip • custom

Parameter	Details	Operation
Server IP or Domain	When “custom” in “service provider” is seleted, “Server IP or Domain” will be configured. Default is standard DDNS protocol. for customized protocol, pls contact our engineer.	WORD type, max 64 byte,
Server Port	Set the port number of the DDNS server provided by the service provider. The default port number is 80.	Value area: 1～65535 If empty, it means 80 port
User name/Password	Set user name/password of the DDNS service registered in the service provider.	Normal WORD type/CODE type, max 64 byte.
User Domain	Set the domain of the DDNS service provided by the service provider.	Normal WORD type, max 64 byte.
Update Interval	Set the interval of the DDNS client obtains new IP, suggest 240s or above.	Value area: 120～86400 Unit: seconds

Step 4 Click “save”to complete DDNS configuration

NOTE

- DDNS in China: 88IP (www.88ip.net), 3322 (www.3322.org)
- DDNS outside of China: DNSEXIT (www.dnsexit.com), ZONEEDIT(www.zoneedti.com), CHANGEIP(www.changeip.com), DYNDNS(www.members.dyndns.org)
- Afer router reboots, IP address which SIM/UIM gets from ISPs will change. If user uses DDNS in remote login, no matter the IP address changes, he can log on the router.

---END

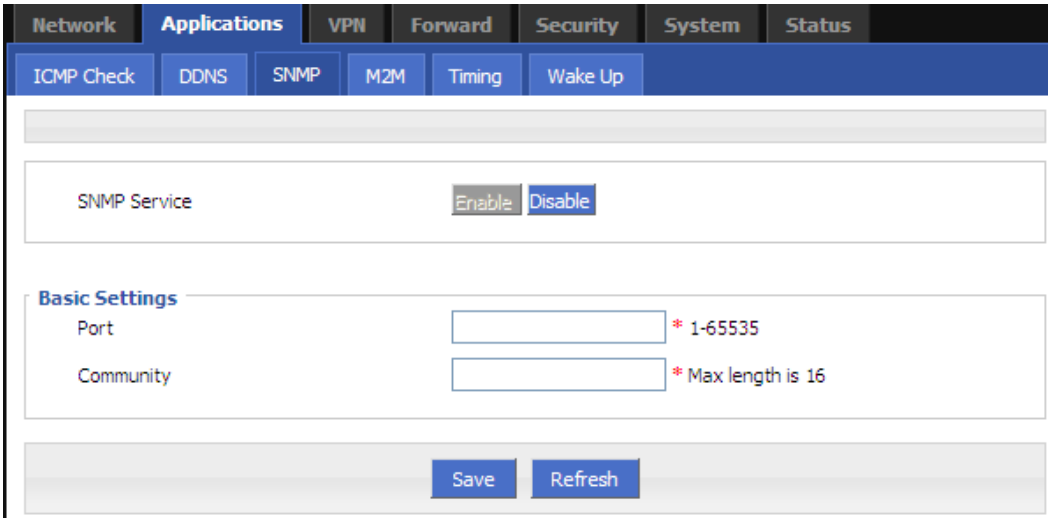
5.3.3 SNMP configuration (optional)

SNMP（Simple Network Management Protocol）can monitor routers remotely and get to know the status of routers (to support VPN status check, MIB of our company shall be used).

Step 1 Log on WEB GUI of S9922 4G Router.

Step 2 Click “Applications > SNMP” to open the “SNMP” tab.

Figure 5-16 SNMP configuration



Step 3 Configure SNMP parameter .

Table 5-9 SNMP Parameter instruction

Parameter	Details	Operation
SNMP service	To enable or disable SNMP service	Options: • Enable • Diable
Basic Config		
Port	SNMP port, suggest to be default port161.	Value area: 1～65535 Default: 161
Community	Community Password of SNMP client to router SNMP. Used for identification.	WORD type, max 16 byte.

Step 4 Single click “save” icon to finish SNMP configuration.

NOTE

MIB for SNMPcab be downloaded from our website, if necessary, please contact our technical engineers.

---END

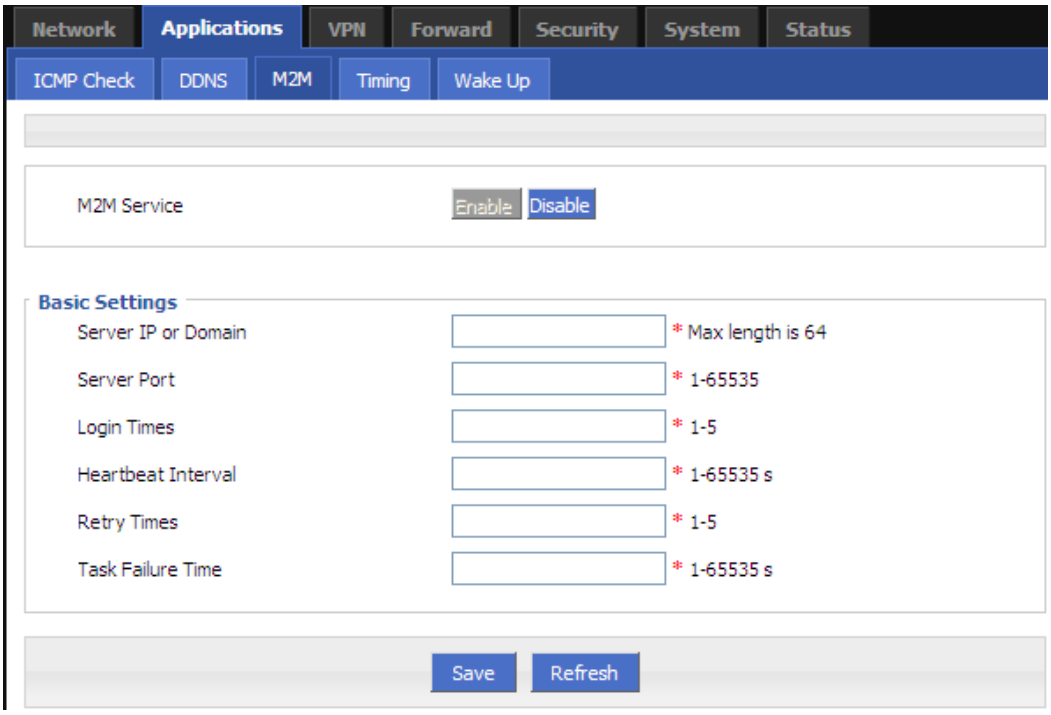
5.3.4 M2M configuration

S9922 4G Router has embedded a WMMP (Wireless Machine-to-Machine Protocol) protocol to realize communication with M2M (Machine-to-Machine) platform which can remotely monitor and manage the routers and its network, e.g visit the router, patch upgrading, firmware upgrading, parameter configuration, monitor the network strenghth, time delay, flow. Its configuration is as follows:

Step 1 Log on WEB GUI of S9922 4G Router.

Step 2 Click “Applications > M2M” to open M2M configuration tab.

Figure 5-17 M2M configuration



Step 3 Configure M2M parameter .

Parameter instruction is shown.

Table 5-10 M2M Parameter instruction

Parameter	Details	Operation
M2M service	To enable or disable M2M function. This function shall be used with our M2M platform.	Button • Enable • Disable

Parameter	Details	Operation
Basic Config		
Server IP or Domain	Set the server IP or domain of M2M platform.	Normal WORD type, max 64 byte.
Server Port	WMMP port No, shall be the same with Port No of M2M platform server	Value area: 1～65535
Login Times	Max retry times of router to login M2M platform. If login times reach max times, the router will reboot, M2M will initialize and login again.	Value area: 1～5 Unit: times
Heartbeat Interval	Time interval to send heartbeat which maintain the like with M2M platform server. The heartbeat includes the network status info which will update the network info of the M2M platform.	Value area: 1～65535 Unit: seconds
Retry Times	There is a retry mechanism for package exchange between router and M2M platform. When exchange times reach retry times, router will judge the exchange fails and usually no operation will be made.	Value area: 1～5 Unit: seconds
Task Failure Time	The time to judge an exchange fails, if an exchange uses time which exceeds the “task failure time”, router will judge the exchange fails and will retry to send the exchange.	Value area: 1～65535 Unit: seconds

Step 4 Single click “save” icon to finish the configuration.

---END

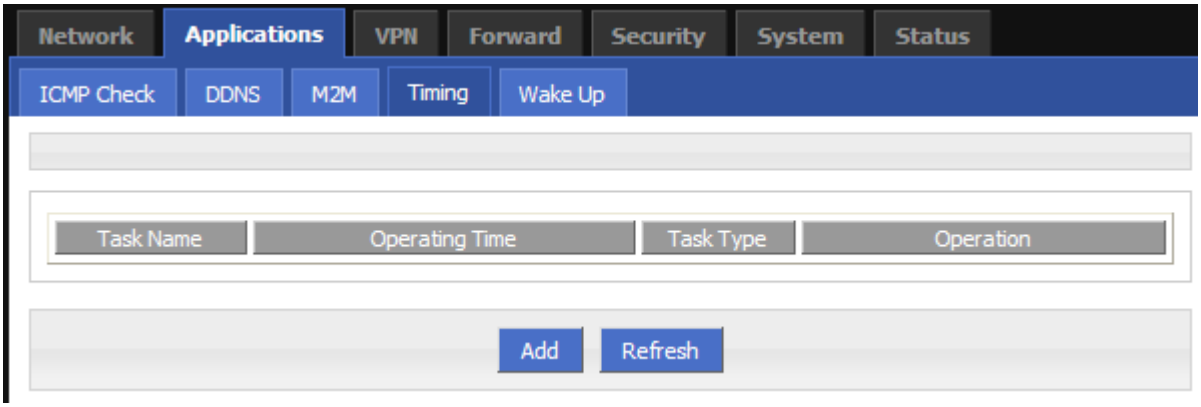
5.3.5 Timing configuration

This application is to control the online time of the router to better manage network and save 3G/4G flow. S9922 can add several online period as per the user’s requirement (e.g. hours of some day). in addition, this application can support to begin some tasks at a time point (e.g redial or reboot at 00:00). Max 10 tasks.

Step 1 Log on WEB GUI of S9922 4G Router.

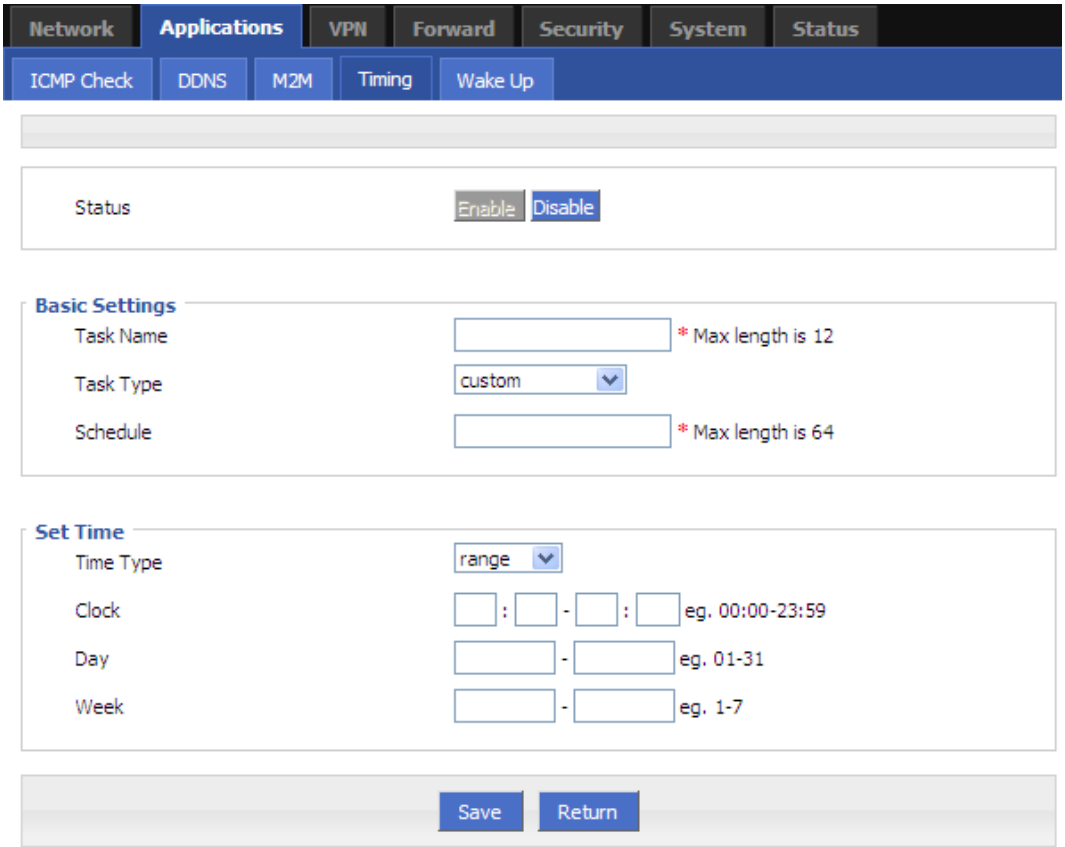
Step 2 Click “Applications > M2M” to open M2M configuration tab.

Figure 5-18 Timing configuration



Step 3 To add a timing task, pls click “Add”.

Figure 5-19 To add timing task



Step 4 Configure timing task parameter .

Table 5-11 Timing task parameter instruction

Parameter	Details	Operation
Status	To enable or disable a timing task. Some task shall be enabled together with NTP.	options • Enable • Disable
Basic Config		
Task name	Name of a timing task.	Max 12 digits.
Task type	Task type has action task and status task. Action task is for time point or time interval, while status task is for time period (for “modem-online” and “modem2-online”), which means that the modem will be online (if down, modem will automatically redial) during the configured time period. Modem will be offline (no dialing) for other time.	Drop DownList options: • modem-online • modem2-online • reboot • custom if select “custom”, “schedule” will be shown to input command (can be diaup or other command). Max 64 bytes
Schedule	This is BGO command. Usually suggested not to use it. In case of need, pls contact our technical engineers.	WORD type. Max 64 digits.
Set time		
Time type	Range or interval for status task or action task.	DropDownList options: • range • interval
When “time type” select “range”		
Clock	To input hour and minute. When beginning and end hour and minute are the same, it means a time point for action task.	Value area: [00:00,23:59] Format: HH:mm-HH:mm
Day	Days in a month for task	Value area: [01,31]

Parameter	Details	Operation
		Format: XX-XX
Week	Days in a week for task. When “day” and “week” are both input, it means only if both conditions meet, the task will begin.	Value area: [1,7] Format: X-X 1 for Monday
When “time type” select “Interval”		
Interval	Time interval for action task	Value area: 1～65535 Unit: minutes

Step 5 Single click “save” icon to finish “Timing” configuration

When “range” is selected, NTP shall be enabled . when “interval” is selected, no such requirement. For “NPT” configuration

---END

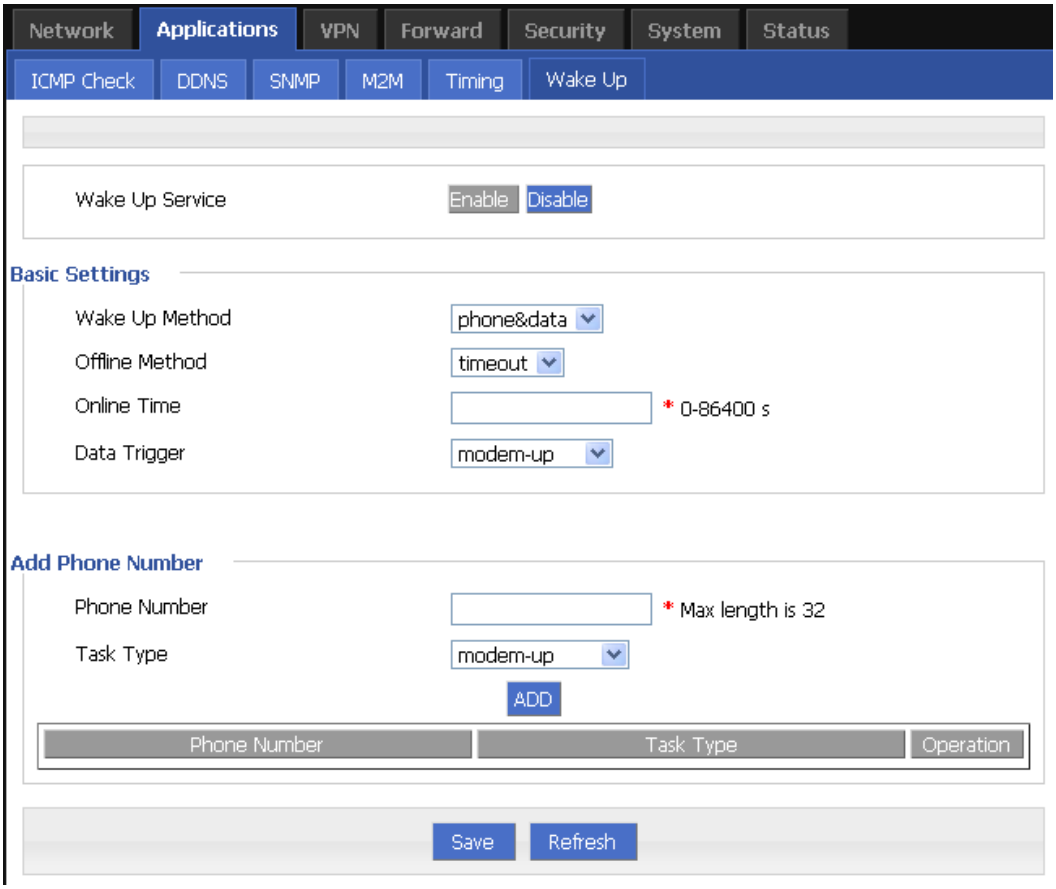
5.3.6 Wake up configuration

3G/4G fee is mostly based on flow. S9922 4G router can get on/off line on demand. It supports on/offline or reboot triggered by voice, SMS or data. It supports max 10 cellphone Nos.

Step 1 Log on WEB GUI of S9922 4G Router.

Step 2 Click “Applications > Wake up” to open “Wak up” tab.

Figure 5-20 Wake up configuration



Step 3 Configure “wake up” parameter.

CAUTION

After finish “basic setting” parameter, click “save” to save it in the flash memory.

Table 5-12 Wake up Parameter instruction

Parameter	Details	Operation
Wake up service	To enable or disable the service.	Options: • Enable • Disable
Add phone Number		
Phone Number	Phone No to trigger the router action. One phone No for one	WORD type. Max 32 digits.

Parameter	Details	Operation
	action of one modem.	
Task type	Triggered action includes modem-up, modem-down, reboot.	DropDownList options • modem-down • modem-up • modem2-down • modem2-up • reboot
Basic setting		
Wake up method	To configure actions triggered, it supports phone and data. If choose phone, pls be sure that the SIM card has opened voice or SMS service. Usually recommend voice wakeup with high efficience and don't need SMS charge.	DropDownList options • phone/date • phone
Offline method	Support "timeout" and "idle". "timeout" means router will get offline once time reaches the configured time commencing from online time. "idle" means if idle (no data transmission) time is as long as the configured time, the router will get offline.	DropDownList options • timeout • idle
Online time	Online time of router, for "idle", online time will recalculated if there is data transmission.	Value area ：0～86400 Unit: second
Data trigger	Configured as wakeup by data. When router receives data from external network, the modem will be triggered to be online, LAN data and broadcast data will not trigger actions. If configured as "phone&data", either phone or data can trigger actions	DropDownList options • modem-up • modem2-up • modem-all-up

Step 4 click "ADD" to add a new wake up rule.

After add a new rule, the rule will be shown on the bottom. To click "Del" to delete the rule.

NOTE

- one phone number be set for actions of different modems, but cannot be set as differenct actions of one modem.
- It's OK for either SIM of the two SIMs of S9922 4G Router to open SMS or voice function, no matter which slot to be installed.
- "Data" will trigger only actions: modem-up/modem2-up/modem-all-up
- If "online time" is set as 0, it means router will be always online. To get the router offline, pls choose actions to trigger offline.
- "online time" in "wake up" will affect other functions like SIM switch, network backup, task management. So when users set wakeup parameter, pls note whether there is conflict with other fuctions.
- Voice trigger: router will begin the action after 5 seconds of the sound "du".

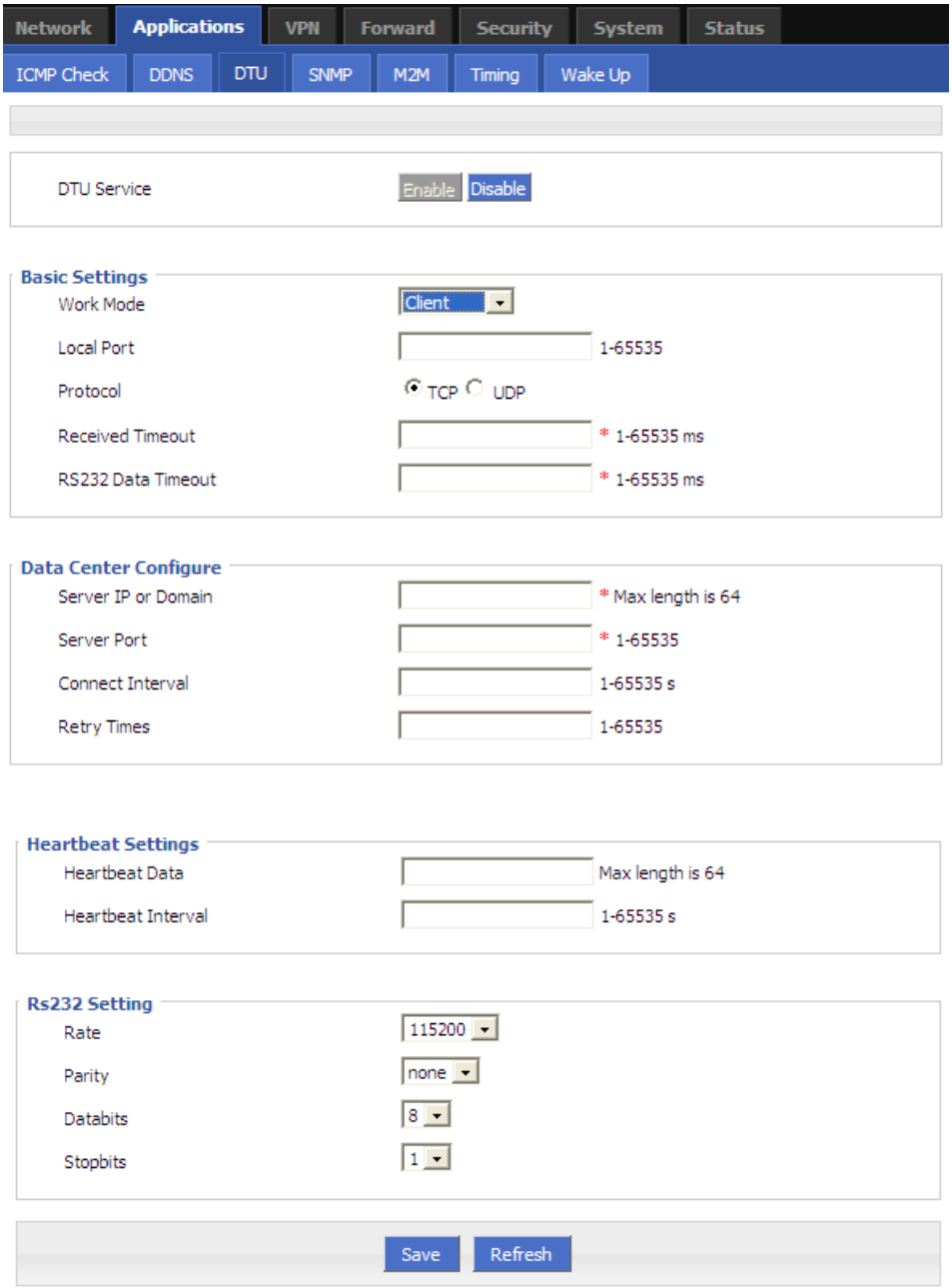
5.3.7 DTU configuration (Optional)

DTU（Data transfer Unit）is to transfer data for meters with RS232 interface from site to center through 3G/4G network. It support TCP/UDP Client/Server mode.

Step 1 Log on WEB GUI of S9922 4G Routers.

Step 2 Click "Applications > DTU" to open "DTU" tab.

Figure 5-21 DTU configuration



Step 3 Configure “DTU” parameter.

Table 5-13 DTU Parameter instruction

Parameter	Details	Operation
DTU Service	Visit the router on web	Enable/Disable DTU service
Work Mode	Connection mode	Select from DropDownList

Parameter	Details	Operation
		• Server: 3G router act as TCP/UDP server • Client: 3G router act as TCP/UDP client • DDPClient: 3G router act as UDP client with RICON protocol.
Local Port	Local port of TCP/IP connection	Specify the port number
Protocol	Protocol of TCP/IP connection	Select protocol
Received Timeout	Receive data coming from 3G network timeout, then pack received data	Specify time to pack data
RS232 Data Timeout	Receive data coming from RS232 interface timeout, then pack received data	Specify time to pack data
Server IP or Domain	Server IP or Domain of TCP/IP connection	Input IP or domain
Server Port	The center side TCP/IP connection server port	Input port number
Connect Interval	The interval DTU retry to connect to TCP/IP connection server	Input interval time
Retry Times	DTU retry connection after failed connect to server	Input the number of times
Heartbeat Data	Data to maintain connection	Input any characters except "!"
Rate	Serial port setting	Acording to connected device
Parity	Serial port setting	Acording to connected device
Databit	Serial port setting	Acording to connected device
Stopbit	Serial port setting	Acording to connected device

Step 4 Single click "save" icon to finish "DTU" configuration

DTU will start to work when modem is online if it is enabled.

---END

5.3.8 GPS configuration (Optional)

GPS is to transfer GPS data the device gets from satellite. It uses UDP protocol.

Step 1 Log on WEB GUI of S9922 4G Routers.

Step 2 Click “Applications > GPS” to open “GPS” tab.

Figure 5-22 GPS configuration

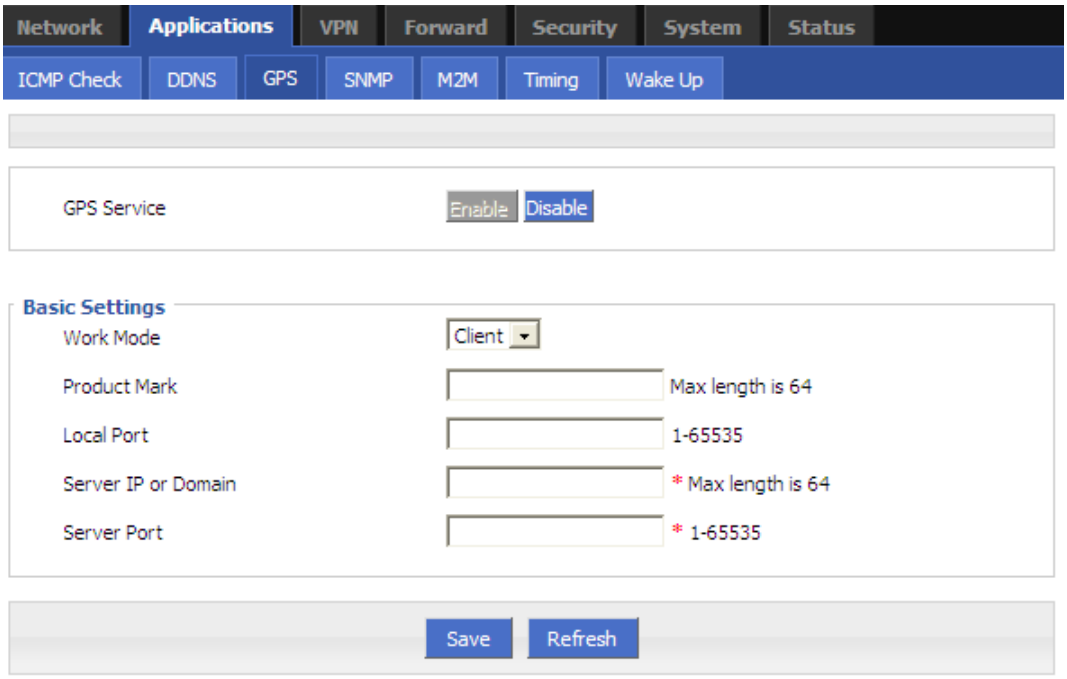


Table 5-14 GPS Parameter instruction

Parameter	Details	Operation
GPS Service	Visit the router on web	Enable/Disable GPS service
Work Mode	Connection mode	Client mode
Product Mark	Mark device with this ID	Add a mark to end of data
Local Port	Local port of UDP connection	Select port number
Server IP or Domain	Server IP or domain for getting the GPS data	Specify server IP or domain
Server Port	Server port for getting the GPS data	Specify server port

Step 1 Single click “save” icon to finish “GPS” configuration

GPS will start to work when server IP or domain is reachable from router.

---END

5.4 Security

5.4.1 Overview

"Security" will control where the data can pass through by analyzing IP address and port of ICMP, TCP/IP package from the destination end or source end. S9922 4G Router supports IP filter, domain filter and MAC filter.

5.4.2 configuration

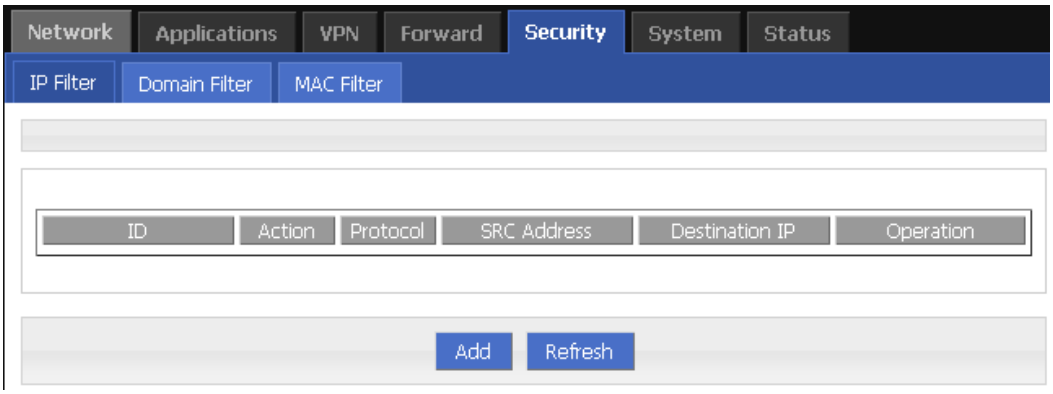
IP Filter

IP filter refers to judgement whether to allow router to faward the data according to filter rules, thus to manage internet surfing of PC in LAN. IP filter is used to allow part of PCs in LAN to visit external WAN network or forbidden some PCs from visiting specific website.

Step 1 Log on WEB GUI of S9922 4G Router.

Step 2 Click "Secutiry > IP Filter" to open "IP Filter" tab.

Figure 5-23 IP Filter tab



Step 3 Click "Add" to add a new IP filter rule and configure IP filter parameter. There are two types of IP filter: "Basic" and "Expand". To add a rule.

Figure 5-24 IP filter "Basic" type

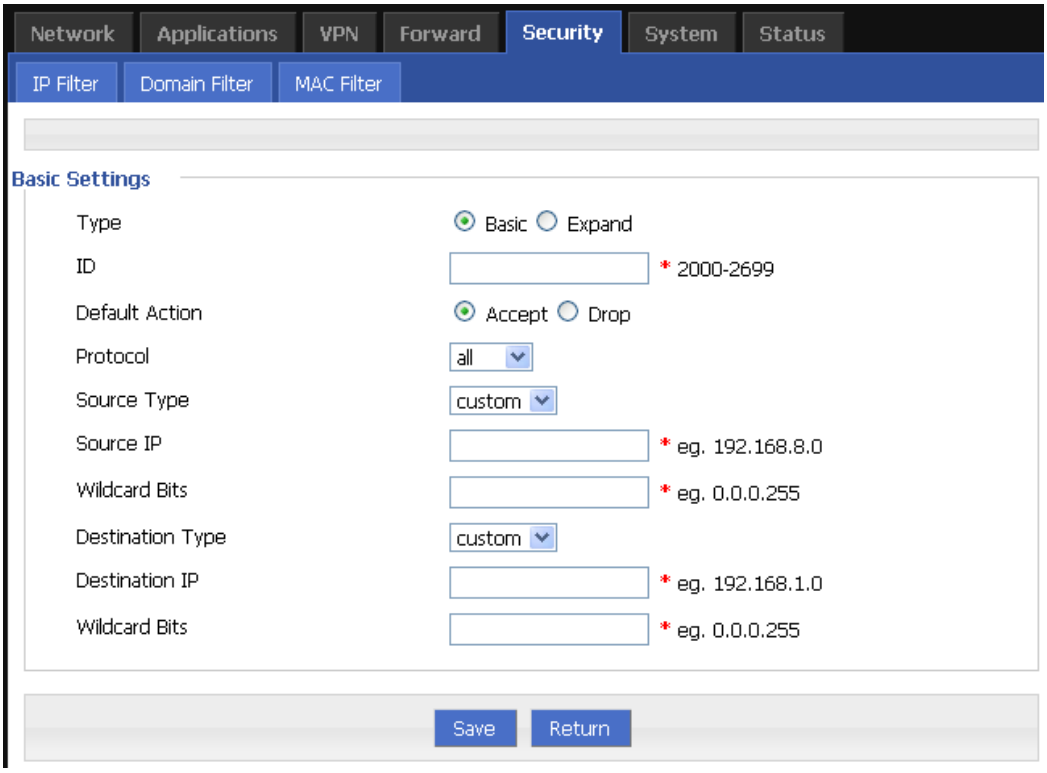


Figure 5-25 IP Filter "Expand" type

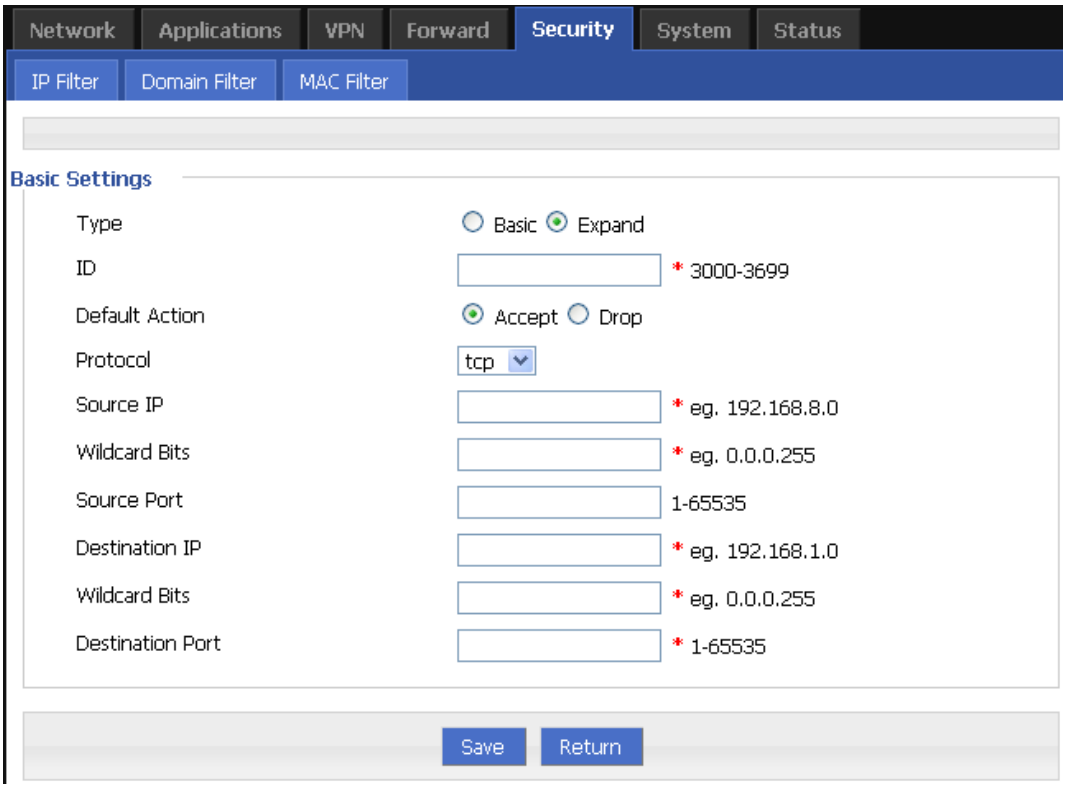


Table 5-15 IP filter parameter instruction

Parameter	Details	Operation
Type	To select an IP filter type, “Basic” or “Expand”. • Basic: standard IP filter, not for port. • Expand: for specific port IP filter.	Select “Basic” or “Expand”.
ID	To name this rule.	Value range: [2000,2699] for “Basic”; Value range: [3000,3699] for “Expand”.
Default action	The default action of this rule, to choose “Accept” or “Drop” • Accep: firewall will accept this package and allow this package pass. • Drop: firewall will drop this package.	Select “Accept” or “Drop”.
Protocol	To set data communication protocol, for “Basic” type, “TCP”, “UDP”, ICMP” or “ALL” can be selected. For “Expand” type, “TCP” or “UDP” can be selected.	To select one in DropDownList
Source type (only for “Basic”)	IP address type of data source end, “custom”, “any” or “host” can be selected • Custom: IP address will be customized. • Any: any IP address. • Host: for single IP address.	Select from DropDownList
Source IP	To set IP address of data source end (when “Source type” is selected as “custom” and “host”).	Format: A.B.C.D type.
Wildcard Bits	To set the wildcard bits of data sending end. (only for “custom” in “source type” in “Basic”.)	Format: A.B.C.D type.

Parameter	Details	Operation
Source Port	To set port No of data sending end, only for “Expand” type.	Value area ：1～65535
Destination type (only for “Basic”)	To select IP address type of data receiveing end. “interface”, “any” to be selected	Selected from DropDownList.
Destination IP	IP address of data receiving end. (only for “custom” in “Destination type” in “Basic”.)	Format: A.B.C.D type.
Wildcard Bits	To set the wildcard bits of data receiving end. (only for “custom” in “Destination type” in “Basic”.)	Format: A.B.C.D type.
Destination Port	To set port No of data receiving end. Only for “Expand”.	Value area ：1～65535

Step 4 Single click “save” to finish.

--END

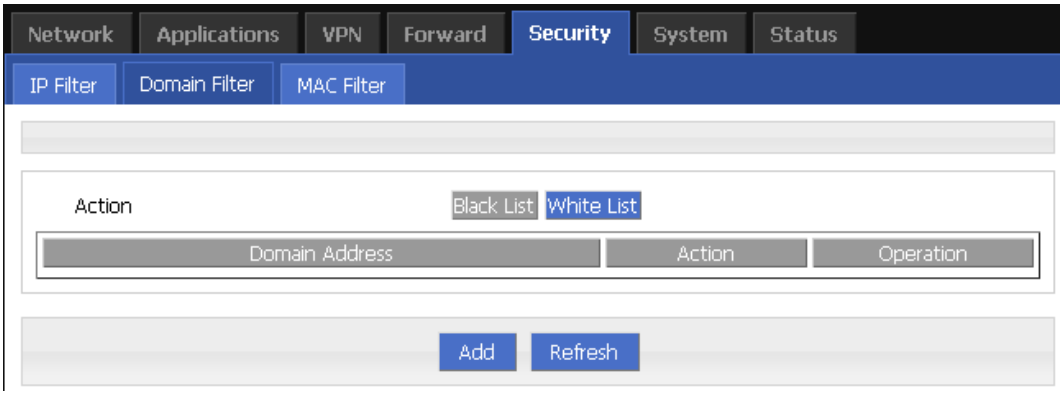
Domain Filter

Domain filter support black list and white list. It is used to firbid PCs in LAN from visit someb websites or allow them to visit specific webistes.

Step 1 Log on WEB GUI of S9922 4G Router.

Step 2 Click “Secutiry > Domain Filter” to open “Domain Filter” tab.

Figure 5-26 Domain filter tab



- Black list: websites in the blacklist cannot be visited. Click “black list” to forbid visiting the websites in the list.
- White lis: only the websites in the whitelist can be visited, while other websites cannot be visited. Click “White list” to activate it.

Step 3 Click “ADD” to add a new domain filter rule and configure domain filtering parameter.

Figure 5-27 Domain filter tab

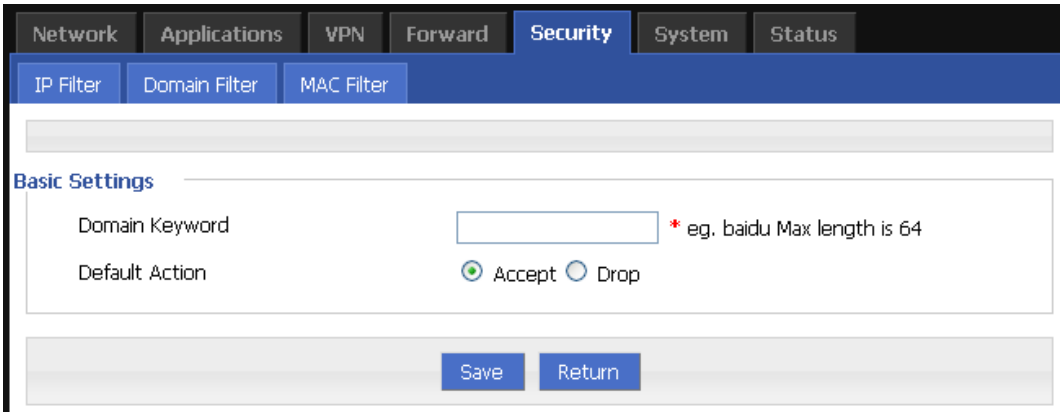


Table 5-16 Domain Filter parameter instruction

Parameter	Details	Operation
Domain keyword	Keyword of domain for filter	WORD type, max 64 digits. E.g. www.google.com, the keyword is “google”.
Default action	Actions to filter the keyword	• Accept. • Drop

Step 4 Single click “Save” to finish configuring a rule.

---END

MAC Filter

Step 1 Log on WEB GUI of S9922 4G Router.

Step 2 Click “Secutiry > MAC Filter” to open “MAC Filter” tab.

Figure 5-28 MAC Filter tab

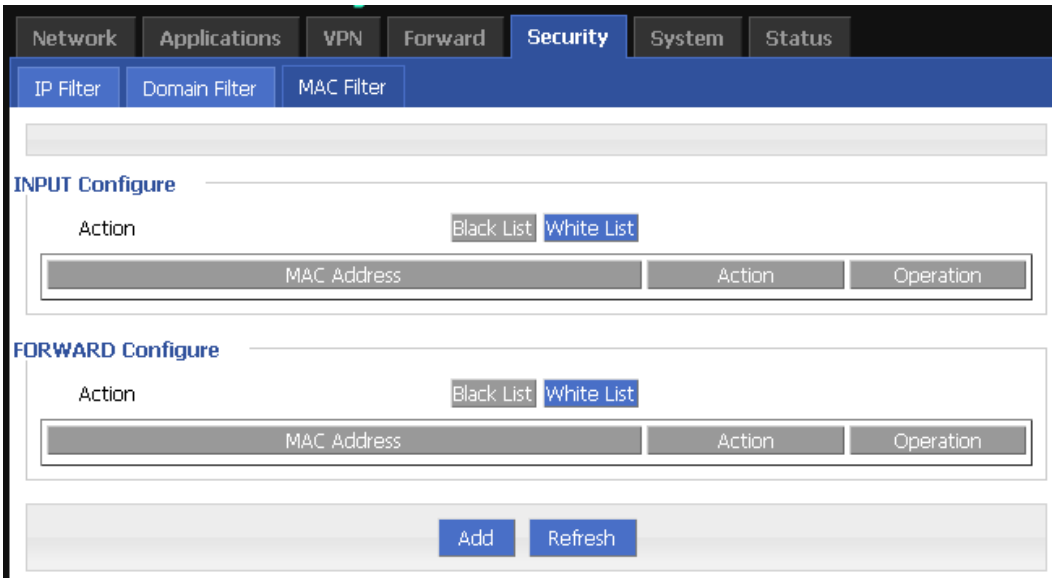


Table 5-17 MAC Filter explanation

Parameter	Details	Operation
Input configuration		
Action	To activate MAC input filtering black list / white list.	• Blacklist: rules in blacklist cannot visit router, other MACs can visit router. • Whitelist: rules in whitelist can visit router, other MACs cannot visit router.
Forward configuration		
Action	To activate MAC forward filtering black list / white list.	• Blacklist: rules in blacklist cannot visit external network, other MACs can visit external network through router. • Whitelist: rules in whitelist can visit external network, other MACs cannot visit external network through router.

Step 3 Click “Add” to add a new MAC filter rule and configure MAC filtering parameter.

Figure 5-29 MAC Filter configuration

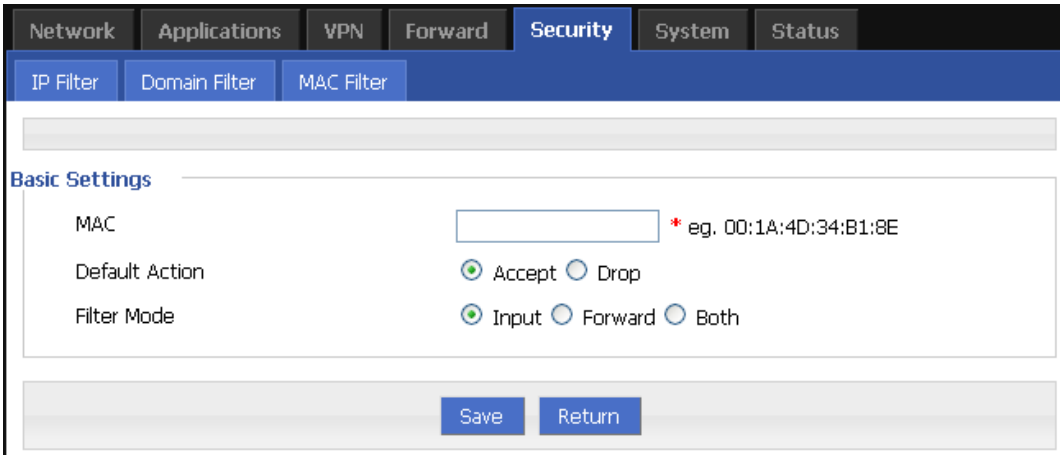


Table 5-18 MAC Filter Parameter instruction

Parameter	Details	Operation
Basic Settings		
MAC	MAC to be filtered	WORD type MAC format: XX:XX:XX:XX:XX:XX
Default Action	Default actions of the rule. Can be “accept” or “Drop”: • Accept: to accept all packages from this MAC. • Drop: to drop all packages from this MAC.	To choose “accept” or “Drop”
Filter mode	To choose “Input”, “Forward” or “Both”. • Input: all packages visiting router. • Forward: all packages forwarded by router. • Both: both Input and forward.	To choose “Input”, “Forward” or “Both”.

Step 4 Single click “save” icon to finish.

---END

5.5 Forward configuration

5.5.1 Overview

Forward function of S9922 4G Router includes NAT, Routing, dynamic routing (RIP, OSPF) (optioanal) and QoS (optional).

5.5.2 NAT

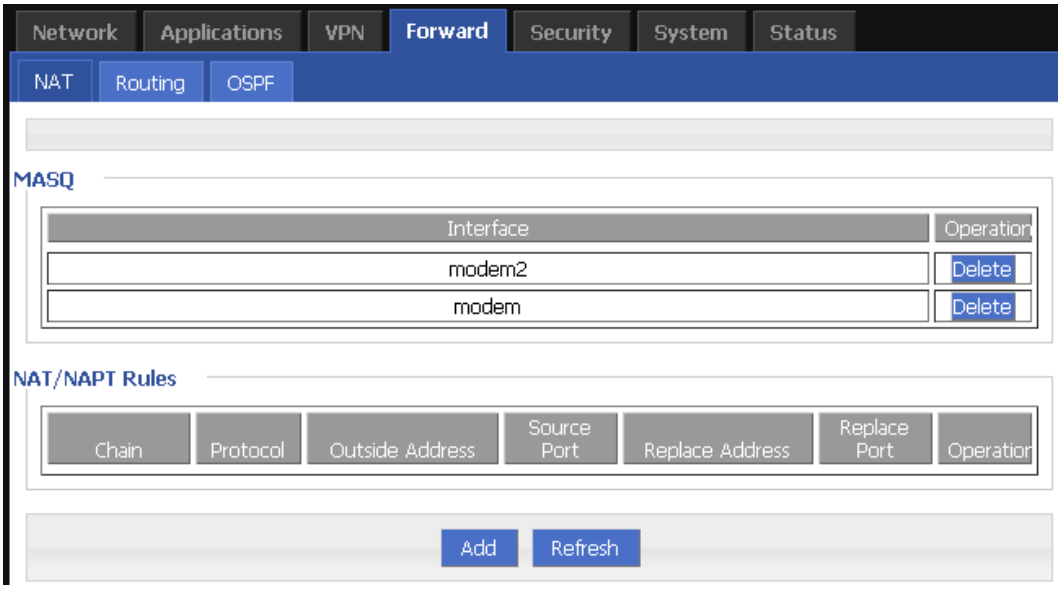
NAT configuration rule

NAT stands for Network Address Translation, DMZ for Demilitarized Zone.

Step 1 Log on WEB GUI of S9922 4G Router.

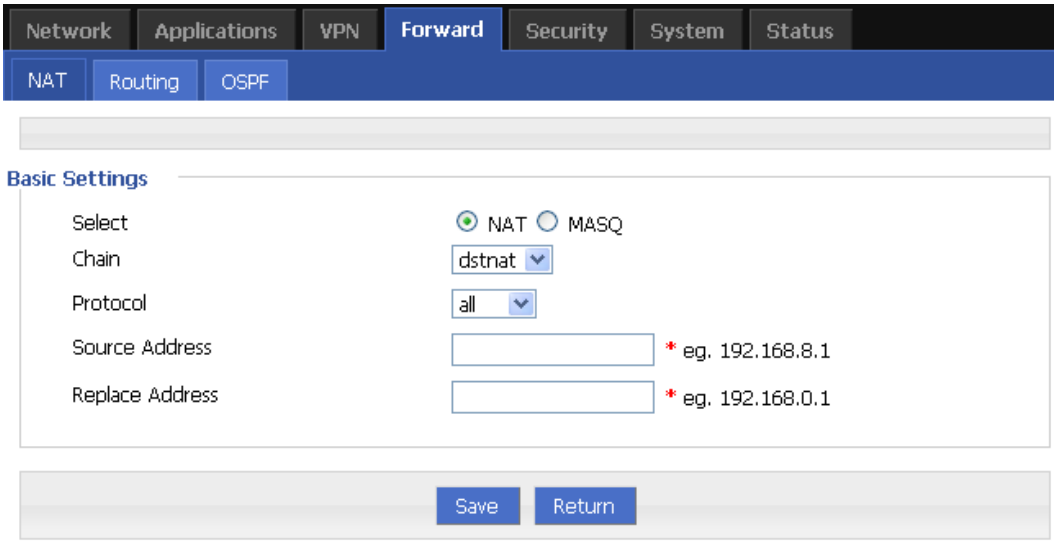
Step 2 Click “Forward > NAT” to open “NAT” tab.

Figure 5-30 NAT tab



Step 3 Click “Add” to add a new NAT rule.

Figure 5-31 NAT rule configuration



Step 4 Configure NAT rule parameter .

Table 5-19 NAT Parameter instruction

Parameter	Details	Operation
Basic Settings		
Select	To choose “NAT” or “MASQ” for the rule	Choose “NAT”.
Chain	NAT Type	Choose from DropDownList • srcnat(Source Network Address Translation): router will convert source address of package into configured address of NAT. • dstnat(Destination Network Address Translation): router will convert the destination address of packages into configured address of NAT.
Protocol	Supports “TCP”, “UDP”, “ICMP” or “ALL”	Select from DropDownList
Source Address	Set the source IP address.	e.g. 192.168.8.1

Parameter	Details	Operation
Source port	When choose “TCP” or “UDP” “source port” needs to be configured for port of “TCP” or “UDP”.	Value area: 1～65535
Replace address	To set IP address of LAN PC of NAT forwarding.	e.g. 192.168.8.1
Replace port	When choose “TCP” or “UDP” “Replace port” needs to be configured for port of “TCP” or “UDP”.	Value area :1～65535

Step 5 Single click “save” icon to finish.

---END

MASQ rule configuration

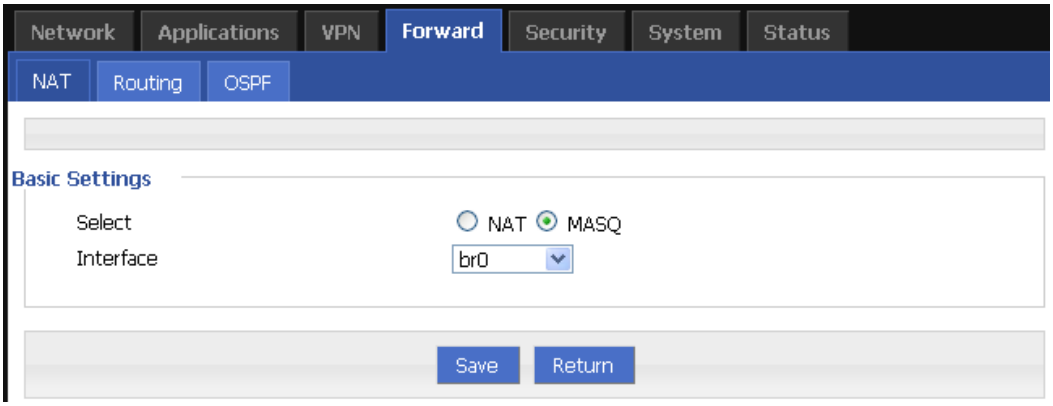
MASQ is MASQUREADE

Step 1 Log on WEB GUI of S9922 4G Router.

Step 2 Click “Forward > NAT” to open “NAT” tab.

Step 3 Click “Add” and choose “MASQ”

Figure 5-32 MASQ configuration



Step 4 Configure MASQ rule parameter .

Table 5-20 MASQ rule Parameter instruction

Parameter	Details	Operation
Select	To select “NAT” or “MASQ”	Select “MASQ”.
Interface	Interface includes: • br0: use br0 interface as commucation address between rouer & LAN and external network. • Modem: use modem interface as commucation address between rouer & LAN and external network. • modem2: use modem2 interface as commucation address between rouer & LAN and external network. • eth0: use eth0 interface as commucation address between rouer & LAN and external network.	Select from DropDownList

Step 5 Single click “save” icon to finish.

NOTE

DMZ (demilitarized zone): when external address of NAT is “0.0.0.0/0”, and “Chain” is “dstnat” it represents all packages sent to router will be forwarded to internal address of NAT. when external address of NAT is “0.0.0.0, and “Chain” is “srcnat”. It represents the source address of all packages sent from NAT internal address will be converted into interface address of router.

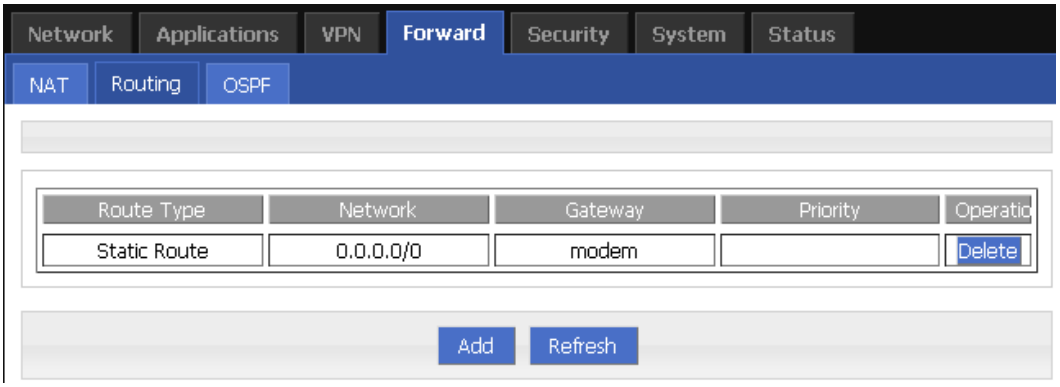
---END

5.5.3 Routing

Step 1 Log on WEB GUI of S9922 4G Router.

Step 2 Click “Forward > Routing” to open “Routing” tab.

Figure 5-33 Routing tab



Step 3 Click “Add” to add a new static routing rule.

Figure 5-34 Static Routing configuration

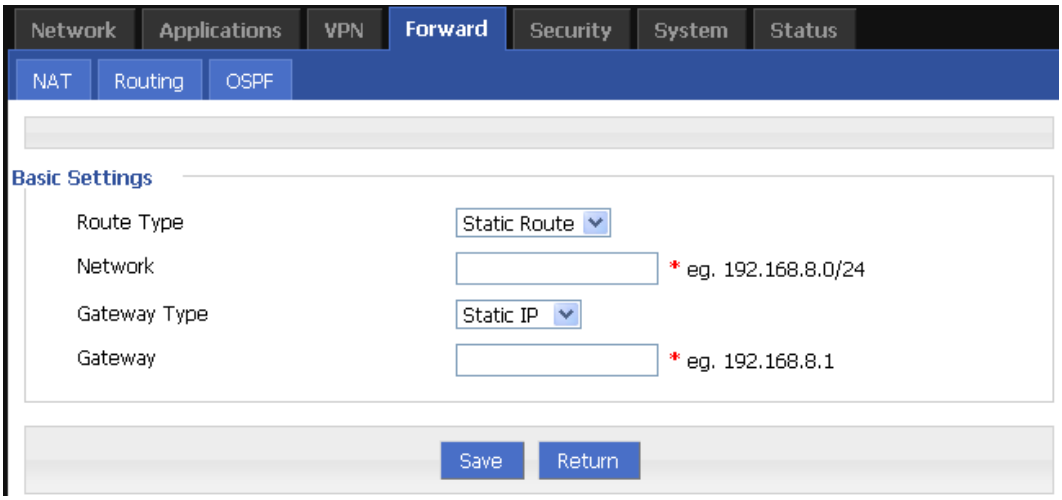
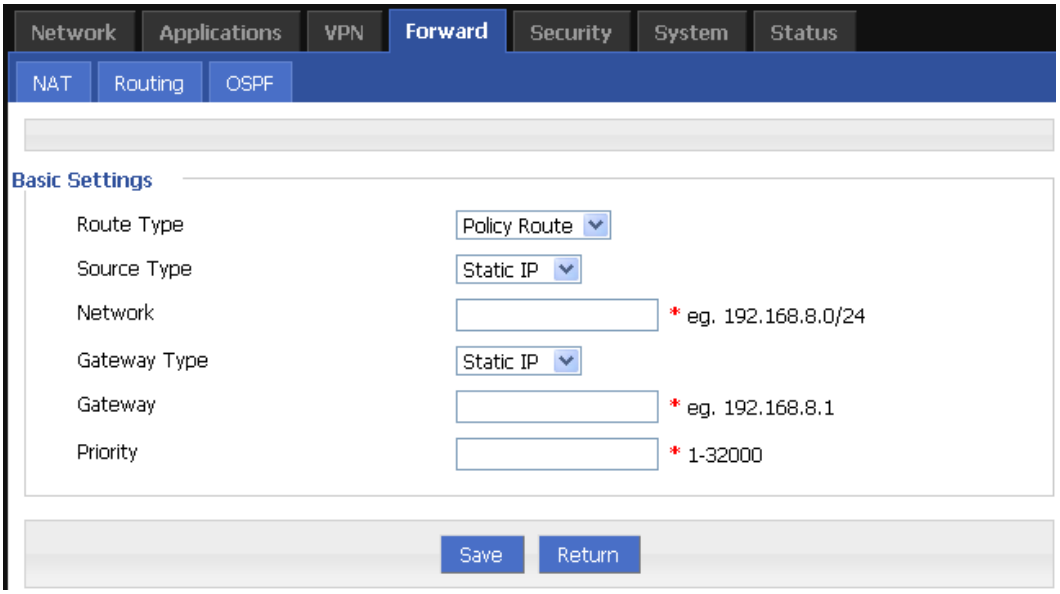


Figure 5-35 Policy routing configuration



Step 4 Configure routing parameter.

Table 5-21 Routing Parameter instruction

Parameter	Details	Operation
Basic settings		
Route type	To select “static route” or “policy route”.	Select in DropDownList
When select “static route” for “Route Type”		
Network	To set destination adderss and netmask of static route.	Format: A.B.C.D/M
Gateway type	To set the gateway of static route including: • Interface • Static IP	Select from DropDownList
Gateway	To set next hop IP address of static route, or port address of neighboring router.	To select from DropDownList
When choose “policy route” for “route type”		
Source type	To set source address type of policy route. • Static IP	Select from DropDownList

Parameter	Details	Operation
	• Interface	
Network	Need to input network address when “source type” selected as “Static IP”.	Input distination address and digits of subbet mask. Format: A.B.C.D/M.
Source interface	Need to configure if “interface” is selected. To select source address of policy route. • modem • modem2	Select from DropDownList
Gateway type	To set the next hop address of policy route. • Static IP • interface	DropDownList
Gateway	Need to input IP address when “static IP” is selected for “gateway type”.	Format: A.B.C.D/M.
Priority	Priority of policy route, the lowerpriority No is, the higher level priority is	Value area: [1,32000]

Step 5 Single click “save” icon to finish.

---END

5.6 VPN configuration

5.6.1 Overview

S9922 4G Router supports VPN (Virtual Private Network) including L2TP/PPTP/GRE/IPIP/IPSEC. What’s more, it supports VPN OVER VPN, e.g. GRE over IPSec, IPSec over PPTP/L2TP/GRE/IPIP.

5.6.2 VPDN configuration

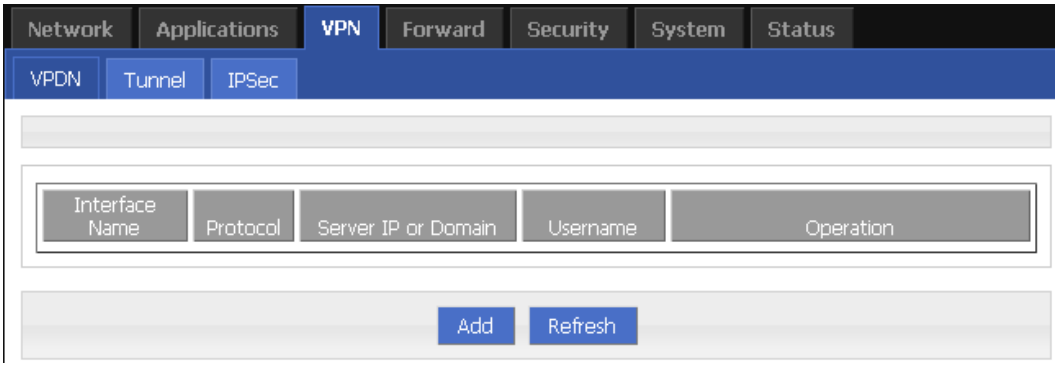
VPDN stands for Virtual Private Dial-up Networks. Now VPDN supports L2TP and PPTP

Step 1 Log on WEB GUI of S9922 4G Router.

See “5.2.1 Login WEB GUI”

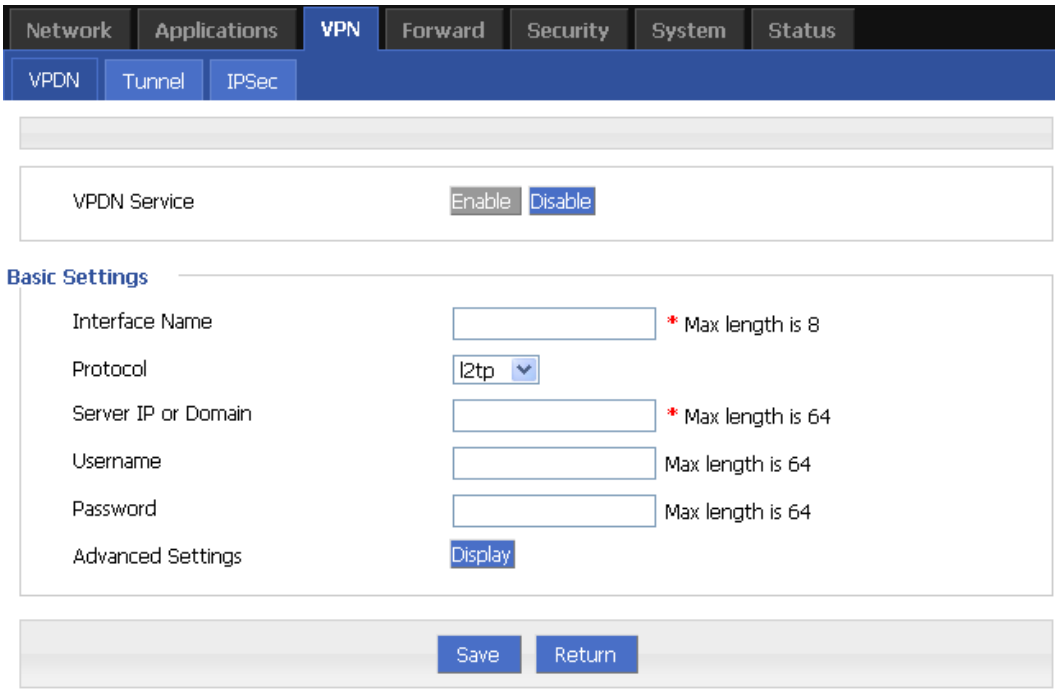
Step 2 Click “VPN > VPDN” to open “VPDN” tab.

Figure 5-36 VPDN configuration



Step 3 Click “Add” to add a new VPDN rule.

Figure 5-37 VPDN rule configuration



Step 4 Configure VPDN rule parameter .

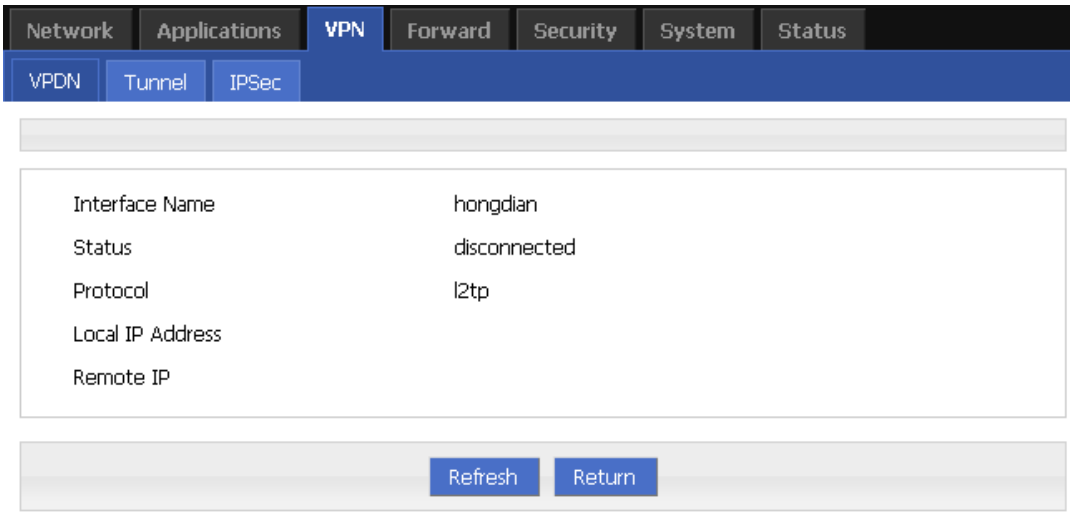
Table 5-22 VPDN rule parameter instruction

Parameter	Details	Operation
VPDN service	To enable or disable the VPDN rule	Click “Enable”
Basic Settings		
Interface name	Name of this VPDN rule.	Cannot be modified after save.
protocol	VPDN protocol includes • L2TP • PPTP	Select from DropDownList, cannot be modified after save.
Service IP or Domain	IP or domain of server to be visited.	To input the IP or domain of server to be visited.
Username	Username of server to be visited	To input the username.
Password	Password of server to be visited	To input password.
Adwanced settings	Advanced parameter of PPP link.	

Step 5 Single click “save” icon to finish.

After a VPDN rule is added, router will build VPN communication with service address automatically. To see the tunnel status, click “View” in “Tunnel” tab.

Figure 5-38 L2TP tunnel status



---END

5.6.3 Tunnel configuration

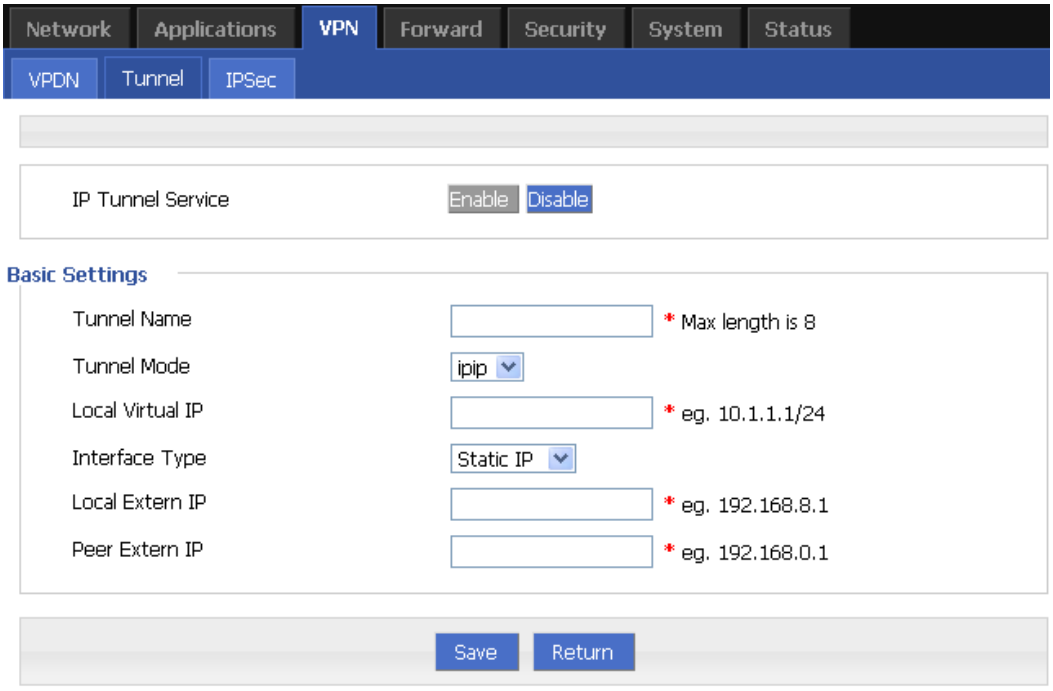
Tunnel supports GRE and IPIP.

Step 1 Log on WEB GUI of S9922 4G Router.

Step 2 Click “VPN > Tunnel” to open “Tunnel” tab.

Step 3 Click “Add” to add a new tunnel.

Figure 5-39 Tunnel configuration



Step 4 Configure Tunnel rule parameter .

Table 5-23 Tunnel rule parameter instruction

Parameter	Details	Operation
IP Tunnel Service	To enable or disable IP tunnel service.	Click “Enable”.
Basic Settings		
Tunnel name	Name of the tunnel, cannot be	Input the name of tunnel

Parameter	Details	Operation
	modified after save.	
Tunnel Mode	Tunnel mode: • gre • ipip	Select from DropDownList
Local virtual IP	Virtual IP address of local tunnel.	Format: interface type A.B.C.D/M.
Interface type	To choose “interface” or “static IP”.	Select from DropDownList.
Local Extern interface	This perameter will need to be set if “interface” is selected in “interface type”. Choose any connected interface as exeternal interface.	Select from DropDownList.
Local extern IP	This paremeter need to be set if “static IP” is selected for “interface type”. It is to set IP address to external network.	Format: interface type A.B.C.D/M.
Peer extern IP	External interface IP of counterpart network tunnel. Usually a public IP address, also can be a LAN IP	Format: interface type A.B.C.D/M.

Step 5 Single click “save” icon to finish.

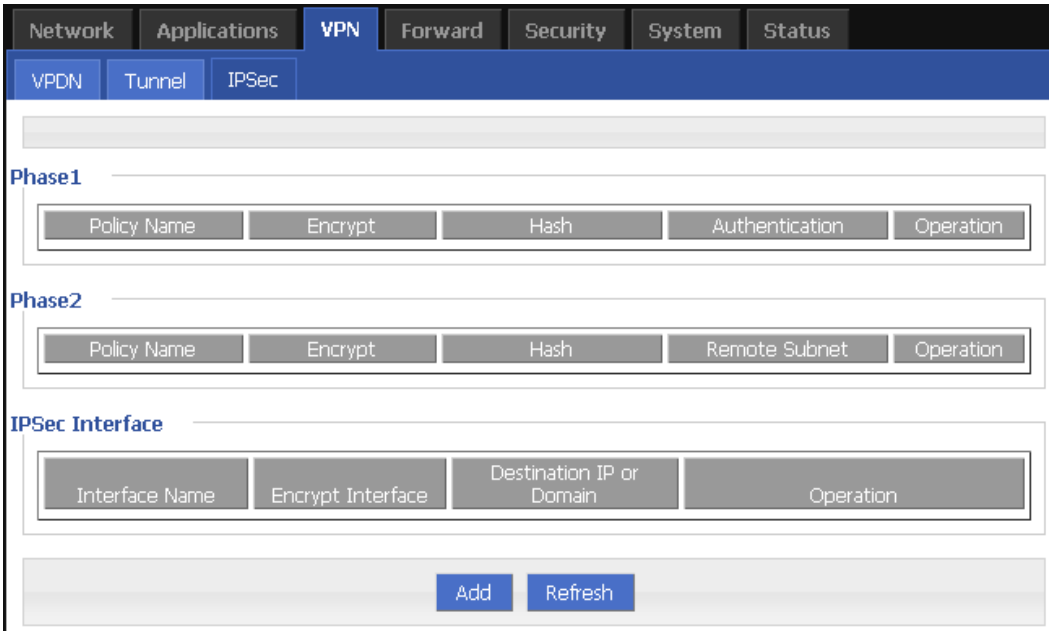
---END

5.6.4 IPSec configuration

Step 1 Log on WEB GUI of S9922 4G Router.

Step 2 Click “VPN > IPSec” to open “IPSec” tab.

Figure 5-40 IPSec tab



Step 3 Click “Add” to add a new IPSec rule.

There are 3 phases for IPSec configuration:

1. Phase 1 parameter

Figure 5-41 IPSec phase 1 configuration

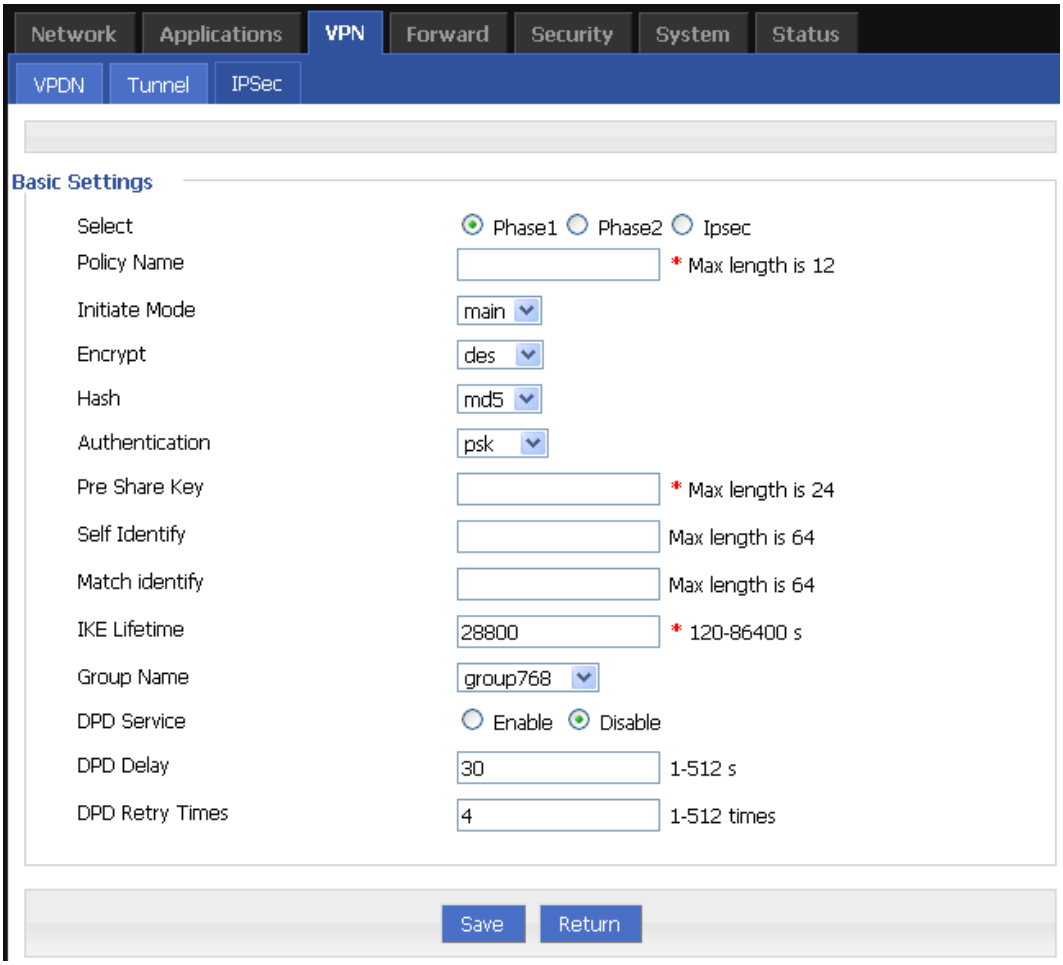


Table 5-24 IPSec Phase 1 Parameter instruction

Parameter	Details	Operation
Basic Settings		
Select	To select which phase of IPSec, phase 1, phase 1 or phase IPSec	Select “Phase 1”
Policy Name	Name of phase 1, mainly to match phase “IPSec”	To input the name of phase 1. Cannot be changed after save.
Initial Mode	To choose “main” or “aggr”.	Select from DropDownList, “aggr” is recommended
Encrypt	Supports 3des and aes	Select from DropDownList

Parameter	Details	Operation
Hash	Supports md5 and sha1.	Select from DropDownList
Authentication	To select authentication	Select from DropDownList, presently only “PSK” supported
Pre Share Key	To set pre share key	Max 24 letters.
Self Identify	To set the self ID of IPSec	To input the ID, need to match the ID of other side.
Match Identify	To input the match ID of IPSec	To input match ID, need to match ID of other side.
IKE Lifetime	Life time of IKE key	Value area: 120～86400 Unit: second
Group Name	Select group	Select from DropDownList
DPD Service	To enable DPD service	To click “Enable”
DPD Delay	To set DPD check interval time.	Manual input Value area : 1～512 Unit: second
DPD Retry Times	Max times to continuous DPD check failure.	Manual input Value area: 1～512

Single click “save” icon to finish phase 1 configuration.

2. Phase 2 parameter.

CAUTION

In above parameters, “Initial Mode”, “Encrypt”, “Hash”, “Authentication” “Pre Share Key”, “IKE Lifetime”, “Group Name” need to match parameter of IPSec server. “Self Identify” and “Match Identify” needs to match “match Identify” and “Self Identify” of IPSec sever respectively.

Figure 5-42 IPSec phase 2 configuration

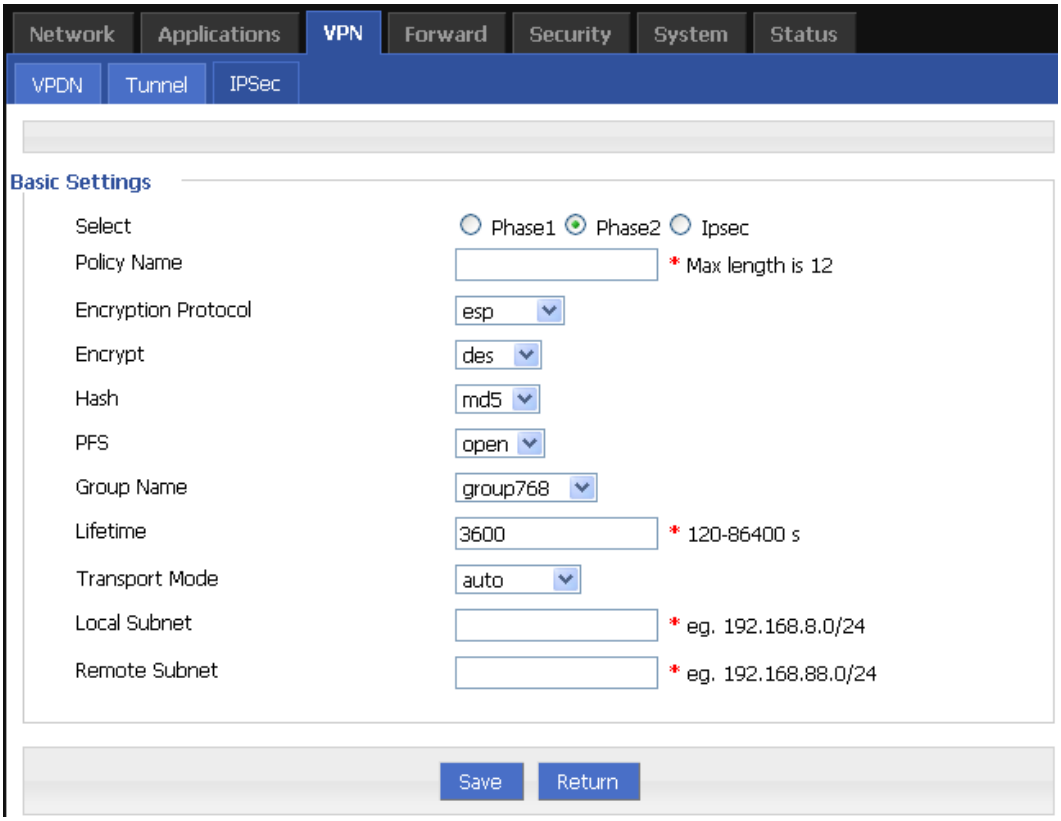


Table 5-25 IPSec Parameter instruction

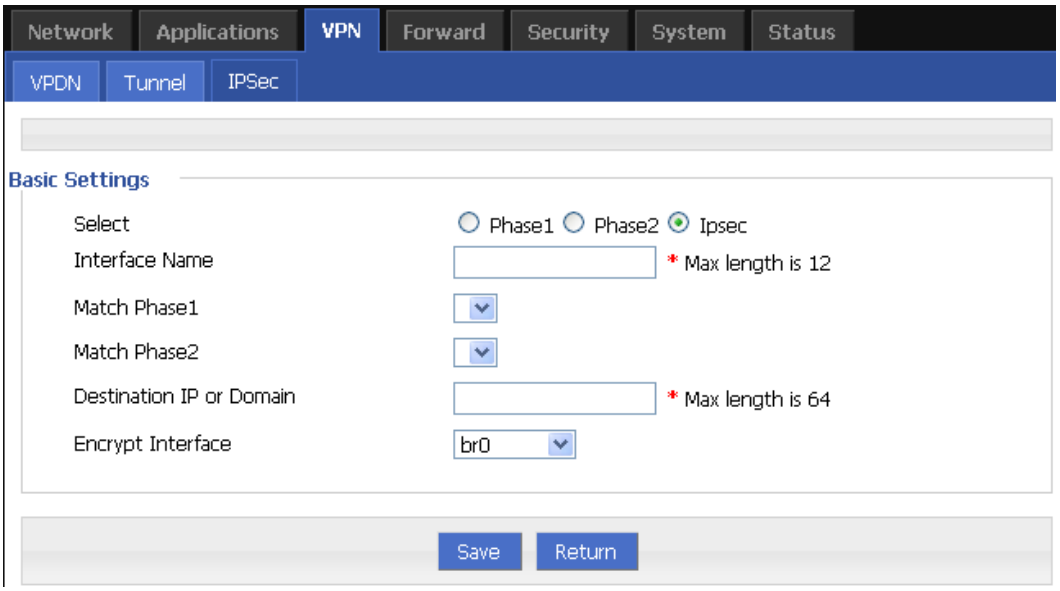
Parameter	Details	Operation
Basic Settings		
Select	To select which phase of IPSec, phase 1, phase 1 or phase IPSec	Select “Phase 2”
Policy Name	Name of phase 2, mainly to match phase “IPSec”	To input the name of phase 2. Cannot be changed after save.
Encryption Protocol	Supports esp, ah, ah+esp	Select from DropDownList
Encryption	Supports des, 3des, aes	Select from DropDownList
Hash	Supports md5 and sha1	Select from DropDownList

Parameter	Details	Operation
Group Name	Need to configured when PFS is “open”, to set the key length of SA initial of phase 2.	Select from DropDownList
PFS	To open or close PFS	Select from DropDownList
Lifetime	IPSec SA key life time	Value area: 120～86400 Unit: second
Transport Mode	Supports tunnel, transport and auto.	Select from DropDownList
Local Subnet	Set local subnet	No need to set for “transport” mode,only for “auto” and “tunnel”. Format: A.B.C.D/M.
Remote Subnet	To set local subnet	No need to set for “transport” mode,only for “auto” and “tunnel”. Format: A.B.C.D/M.

Single click “save” icon to finish phase 2 setting.

3. “IPSec” parameter configuration

Figure 5-43 IPSec configuration tab



To configure “IPSec” parameter, and then click “Save”.

Table 5-26 IPSec Parameter instruction

Parameter	Details	Operation
Basic Settings		
Select	To select which phase of IPSec, phase 1, phase 1 or phase IPSec	Select “IPSec”.
Interface Name	Name of this phase.	Input name.
Match Phase1	To select a matching name of “phase1”.	Select from DropDownList.
Match Phase2	To select a matching name of “phase2”.	Select from DropDownList.
Destination IP or Domain	counterpart IPSec server IP or domain.	Input counterpart IPSec server IP or domain.
Encryption Interface	To select binding interface of IPSec. to bind VPDN/modem/br0 as local interface of IPSec initial can support IPSec OVER VPDN. In addition, after binding, IPSec rule will change as per the charge of binded interface. Thus can resume link of IPSec dialing interface and keep IPSec linked as soon as possible.	Select from DropDownList.

---END

5.7 System configuration

5.7.1 Overview

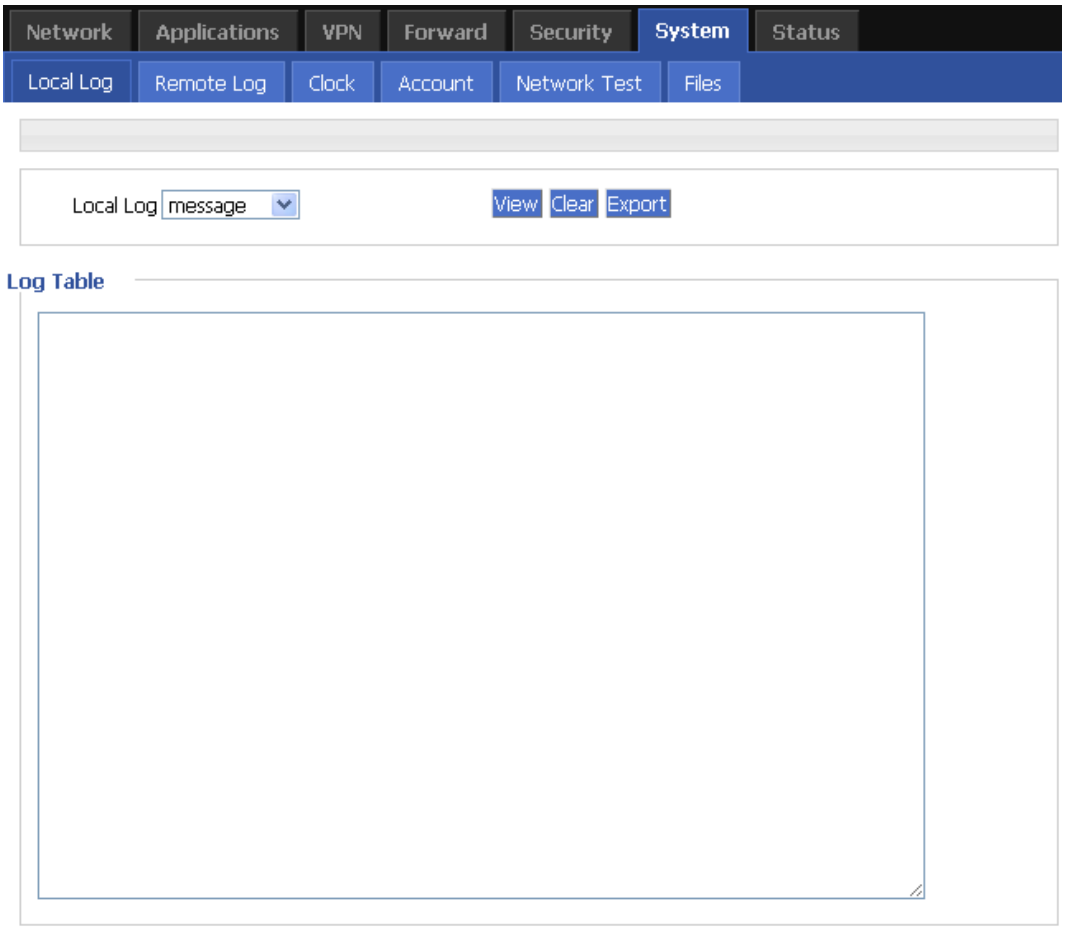
"System" can let you know the status of router, firmware upgrading and other maintenance

5.7.2 Local Log

Step 1 Log on WEB GUI of S9922 4G Router.

Step 2 Click "System > Local Log" to open "Local Log" tab.

Figure 5-44 Local Log tab



Step 3 Select type of "Local Log" and then click "View" to see log.

Click "Clear" to clear the log info in the "Log Table", and click "Export" to export log in your local PC.

There are 3 types log:

- Message: system log, to record the running log of router, usually for most of users.
- Application: application program log, to record the Open or close of some application programs.
- Kernel: kernel log of router, usually for R&D engineers.

NOTE

To see “local log”, “remote log” must be enabled.

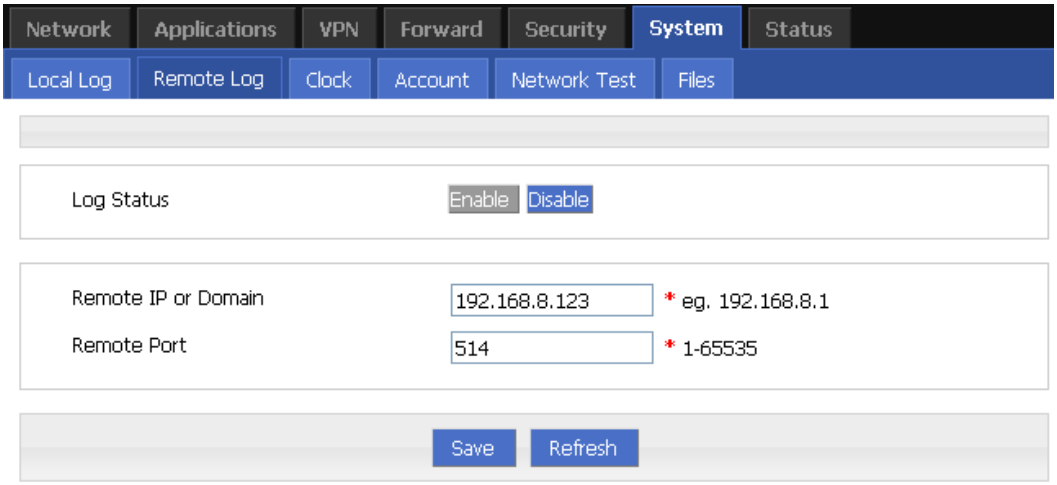
---END

5.7.3 Remote Log

Step 1 Log on WEB GUI of S9922 4G Router.

Step 2 Click “System > Remote Log” to open “Local Log” tab.

Figure 5-45 Remote Log tab



Step 3 Configure “Remote Log” parameter.

Table 5-27 Remote log parameter instruction

Parameter	Details	Operation
Log Status	To enable or disable remote log	Click “Enable”
Remote IP or Domain	IP addres or Domain of remote log server.	To input the IP address or domain to receive log.
Remote Port	Port of remote log server.	Defaut port: 514.

Step 4 Single click “save” icon to finish “Remote Log” parameter configuration.

NOTE

A software tool Syslog is use to receive remote log in server. Syslog can be downloaded at website of RICON www.riconmobile.com.

---END

5.7.4 Clock

Step 1 Log on WEB GUI of S9922 4G Router.

Step 2 Click “System > Clock” to open “Clock” tab.

Figure 5-46 “NPT” Time Synch.

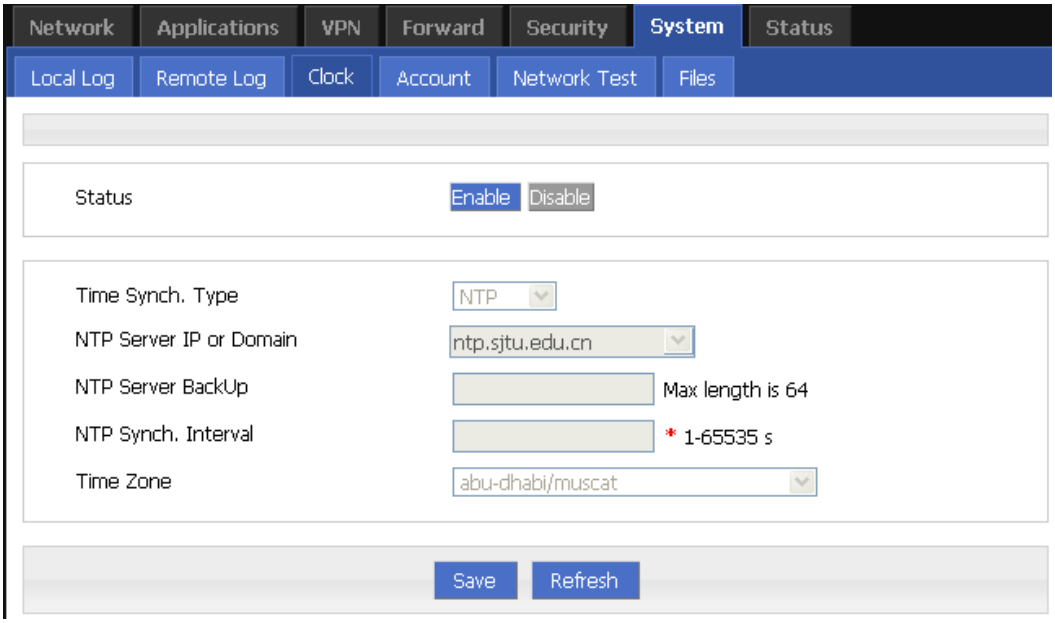
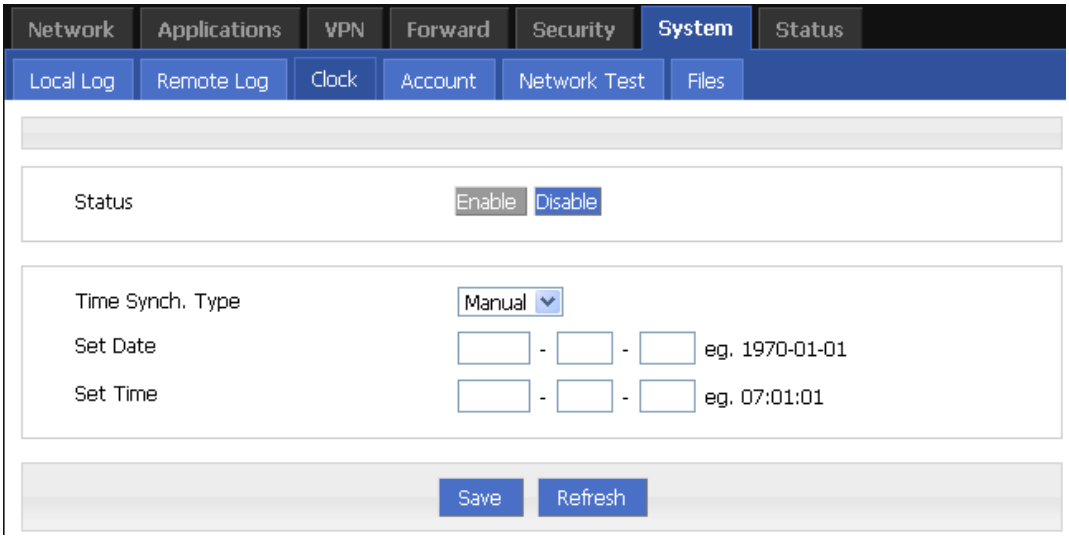


Figure 5-47 Manual Time Synch. Type



Step 3 Set “clock” parameter .

Table 5-28 Clock Parameter instruction

Parameter	Details	Operation
Status	To enable to disable Time Synchnization service	To click “Enable” or “Disable”.
Time Synch. Type	Type to synchnize system time.	Select “NPT” or “Manual”
When select “NPT” in “Time Synck. Type”		
NPT Server IP or Domain	IP or domain of NTP server.	Select from DropDownList
NPT Server Backup	Backup NPT server	Manual input server domain or IP address.
NPT Synck. Interval	Interval of NTP to check time with Server. E.g every 10 minuts.	Value area: 1～65535 Unit: second Default: 600 s
Time Zone	Time Zone	Select from DropDownList
Time Zone Number	For “Custom” option in “Time Zone”. E.g +8 or -4.	WORD type.
When select “Manual” in “Time Synck. Type”		
Set Date	To set date	YYYY-MM-DD

		e.g 1970-01-01
Set Time	To set time	HH:MM:mm Eg. 07:01:01

Step 4 Single click “save” icon to finish.

---END

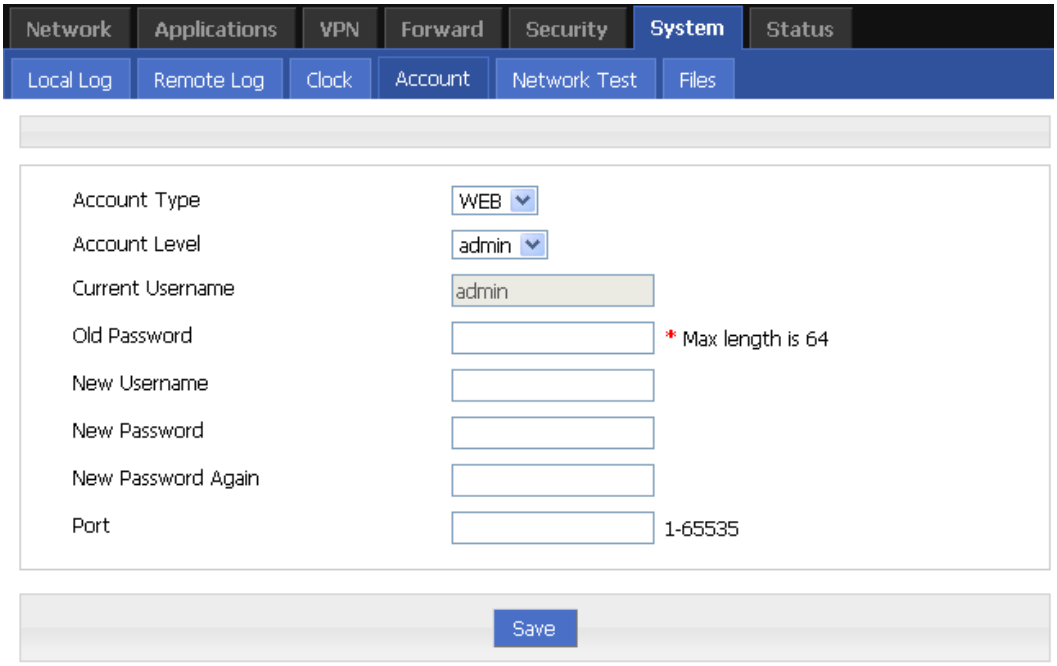
5.7.5 Account

“Accout” is to change username/password, change web port and forbide other users to visitingthe router.

Step 1 Log on WEB GUI of S9922 4G Router.

Step 2 Click “System > Account” to open “Account” tab.

Figure 5-48 Account tab



Step 3 Set account parameter .

Table 5-29 Account parameter instruction

Parameter	Details	Operation
Account Type	Visit the router on web	Select from DropDownList
Account Level	Level of account to login router	Select from DropDownList • Admin: can view and change the parameter. • Guest: can view parameter and export log and use “Network Test”.
Current Username	Current username.	Showing user name
Old password	Current password.	To input current PW
New Username	New username	Manual input, max 64 word type.
New Password	New password	Manual input, max 64 word type.
New password again	To confirm the new password	Manual input, max 64 word type.
Port	Web port to login router.	Manual input Value area 1～65535 Default: 80

Step 4 Click “Save” to finish configuration. After saving, user needs to login again.

---END

5.7.6 Network Test

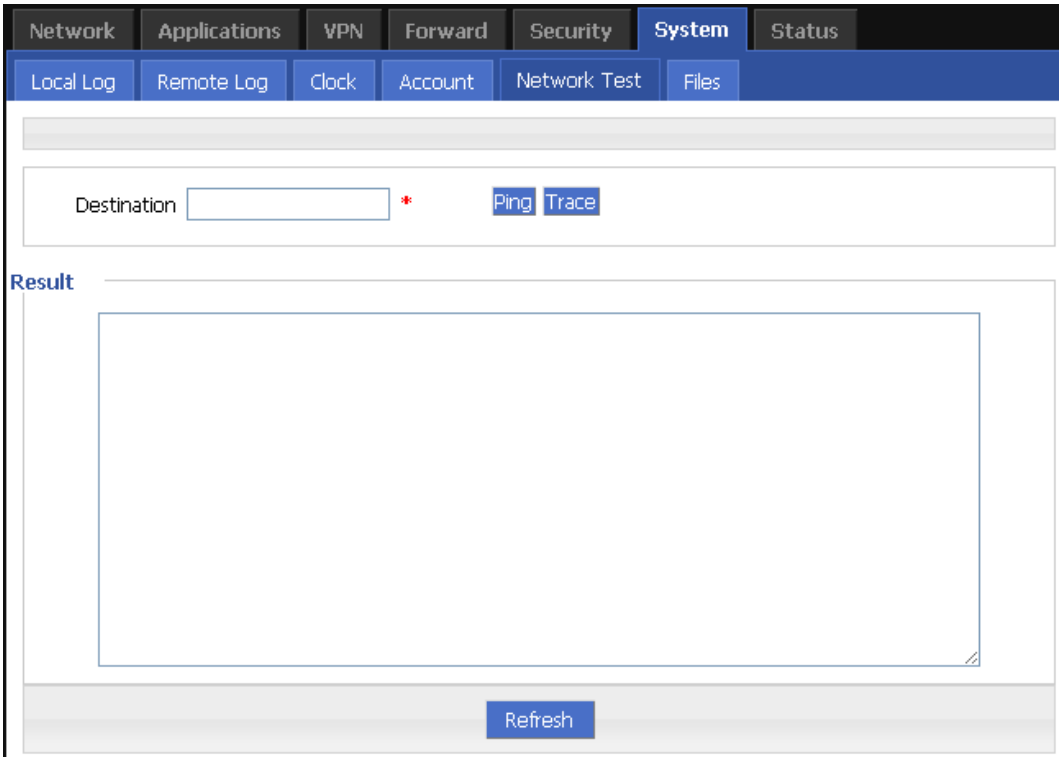
Nework Test

This function includes Ping function and Trace router function.

Step 1 Log on WEB GUI of S9922 4G Router.

Step 2 Click “System > Network Test” to open “Network Test” tab.

Figure 5-49 Network Test Tab



Step 3 Input IP address or domain to be tested in “Destination”, click “Ping, to check whether the router can be linked with destination.

Table 5-30 Network Test Parameter instruction

Parameter	Details	Operation
Destination	To input IP address or domain to be tested.	Input IP address or domain to be tested
Ping	To use Ping to test link	Click “Ping”
Trace	To use Trace command to test hops from the router to destination.	Click “Trace”
Result	Test result	

---END

5.7.7 Files

Firmware Setting

S9922 4G Router supports upgrade firmware locally

Step 1 Log on WEB GUI of S9922 4G Router.

Step 2 Click “System > Files” to open “Files” tab.

NOTE

If “reset” is selected, all paremeters will be reset to factory setting.
In upgrading, don’t close the page.
Upgrading files is suggested not to exceed 6MB. If larger than 6MB pls use “CFE MINI WEB update”.

Step 3 Click “Browse” to select upgrading file and then click “Upgrade”.

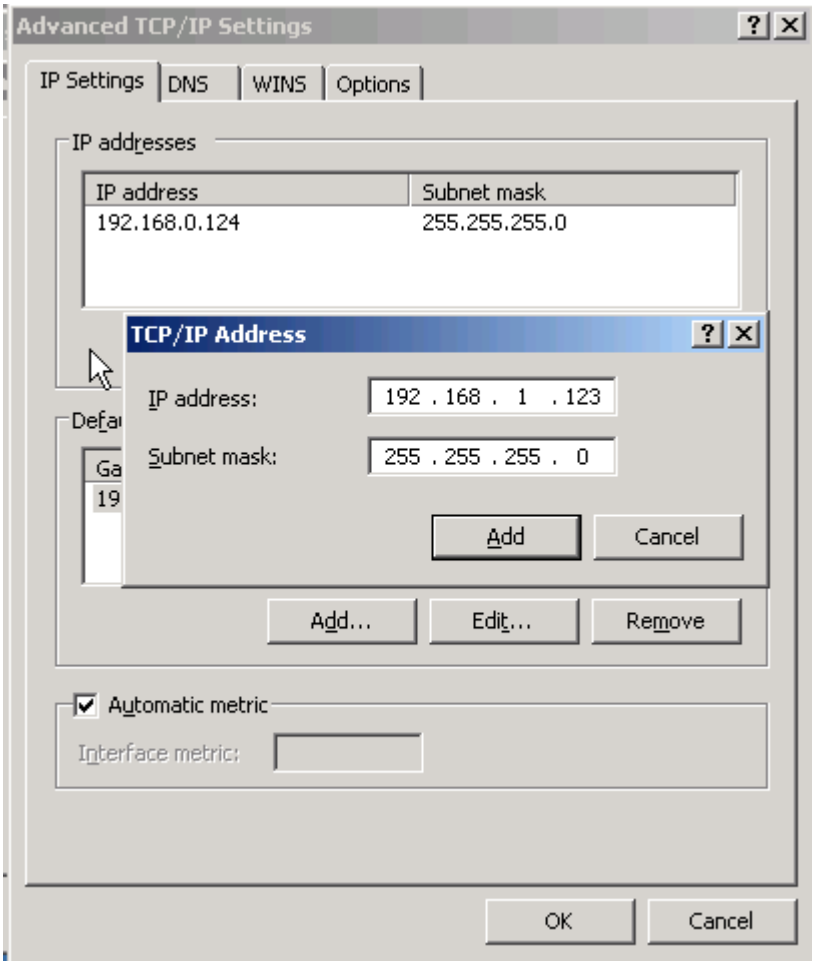
---END

CFE mode upgarding

If upgrading file is larger than 6MB, CFE mode upgrading shall be used to upgrade.

Step 1 Add an IP address 192.168.1.

Figure 5-50 Add an IP address



Step 2 Press the RESET/DEF interface. Do not release it. Hold it, meanwhile power on router, till 30 seconds,and connection to PC is built properly. Then release RESET/DEF interface.

Step 3 Input 192.168.1.1 in your browser, click “enter” you will see following page. If not, start over again from step 1..

Step 4 Click “Browse” to select upgrading file, and then click “Upload” to begin upgrading.

Upgrading will need 4-6 miunites, if RUN light is on, upgrading is OK.

You can also PING br0 address on your PC (eg. **ping** *192.168.8.1 –t*). if Ping ok, upgrading is OK.

---END

Backup setting

S9922 4G Router supports to backup and recover configuration file.

- Click “Browse” to select a configuration file to be imported. And then click “Import” to resume the configuration as the configuration file.
- Click “Export” to export configuration file and save it in local PC.

After inport, router will reboot automatically.
“Key”: if key is input when export configuration file, this key need to be input in import. Not more than 8 digits for key.

Factory setting

S9922 4G Router has function to resume factory configuration. Users can set the configuration to factory mode, and also can set the current configuration into default configutation and generate a default factory configuration file in router. To resume this default factory setting, users can click “Load” in “factory setting”. If the default factory configuration file is deleted, the router will be rusmed back to initial factory setting.

- Save: to save the current setting as default factory configuration setting.
- Load: to resume default factory setting.

Patch operation function

S9922 4G Router support to view and delete patch.

- View: to view current patches.

- Delete: to delete patch.

reboot

click “reboot” to restart the router.

5.8 Status

5.8.1 Overview

Status provides the basic info, network status info, router info of S9922 router.

5.8.2 Base Information

Step 1 Log on WEB GUI of S9922 4G Router.

Step 2 Click “Status > Base information” to open “Base Information” tab.

Figure 5-51 Base Information tab

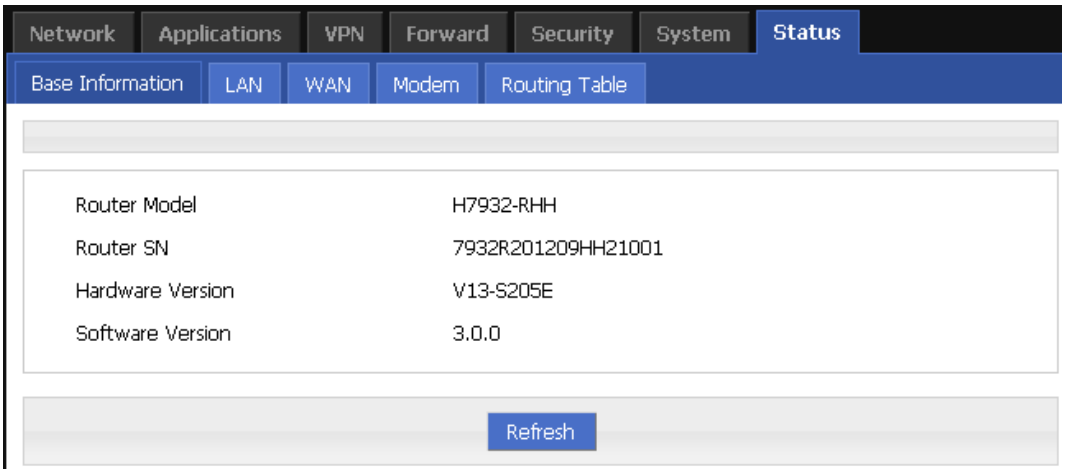


Table 5-31 Base information Parameter instruction

Parameter	Details	Operation
Router Model	Router model info	
Router SN	Router Serial No info	
Hardware version	Router hardware version info	
Software version	OS and application software info.	

5.8.3 LAN

Step 1 Log on WEB GUI of S9922 4G Router.

Step 2 Click “Status > LAN” to open “LAN” tab.

Figure 5-52 “LAN” info

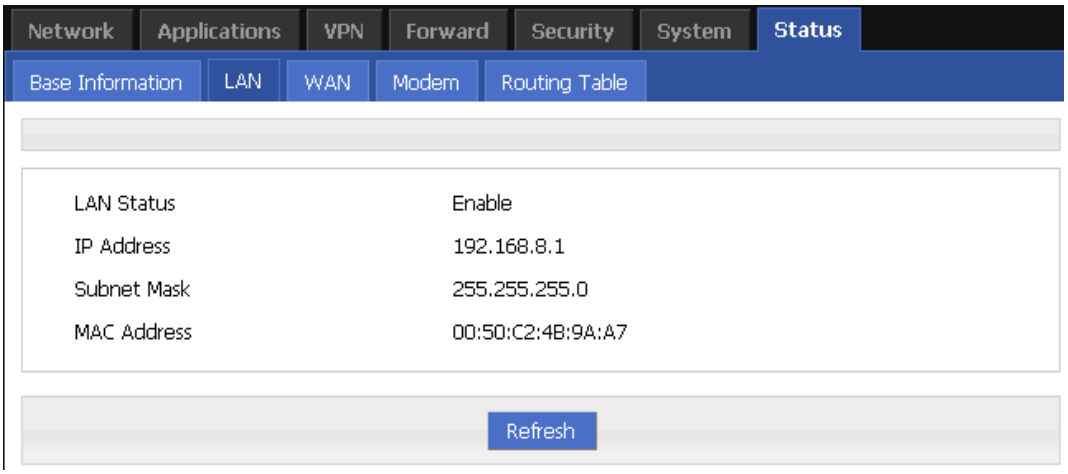


Table 5-32 LAN Parameter instruction

Parameter	Details	Operation
LAN status	To shown current LAN interfaces status.	
IP address	To show the LAN IP address.	
Subnet Mask	Subnet mask of LAN interface.	
MAC address	To shown the MAC address of the router.	

5.8.4 WAN

Step 1 Log on WEB GUI of S9922 4G Router.

Step 2 Click “Status > WAN” to open “WAN” tab. There are three types of WAN status: static IP/DHCP/PPPOE.

Figure 5-53 Static IP WAN status

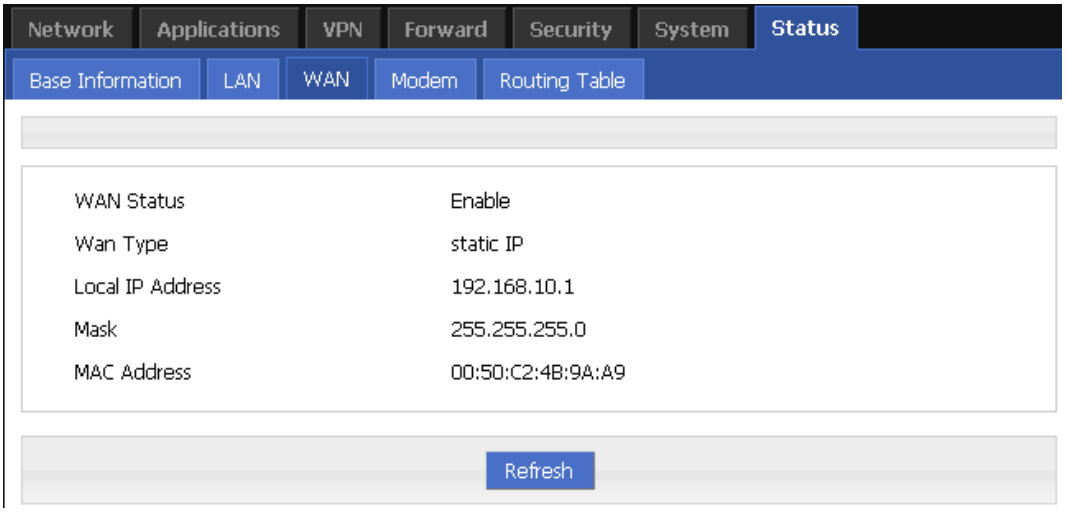


Figure 5-54 DHCP WAN status

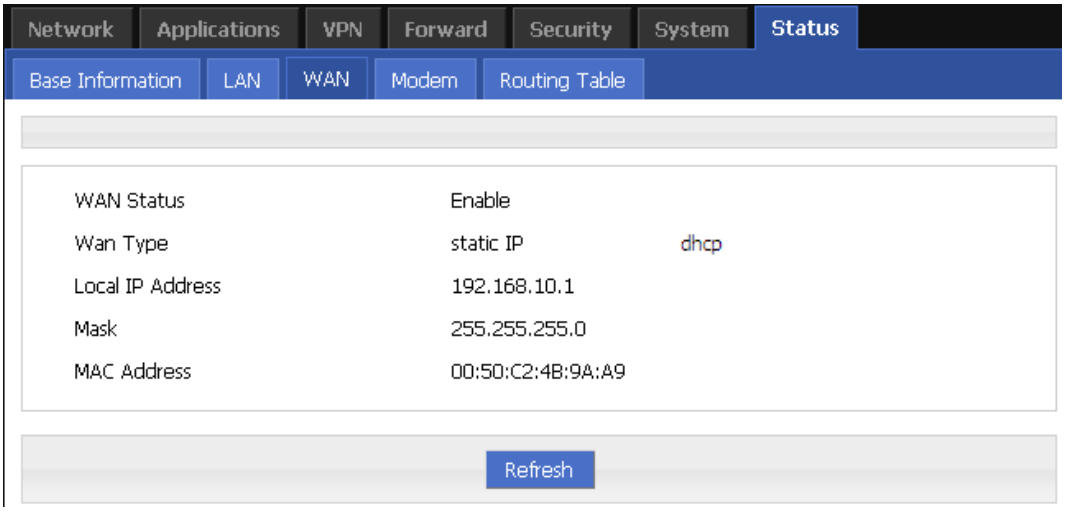


Figure 5-55 PPPoE WAN status

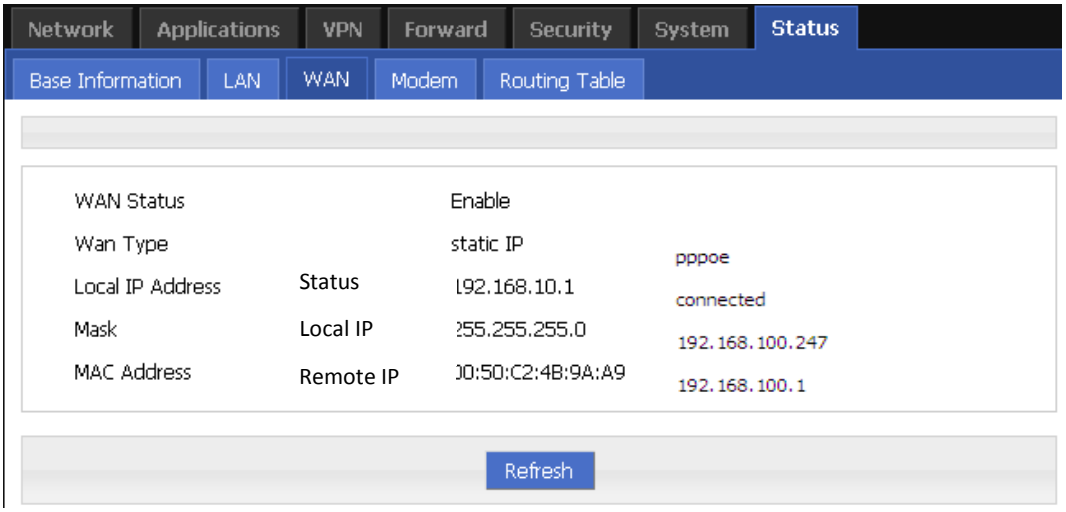


Table 5-33 WAN Parameter instruction

Parameter	Details	Operation
WAN status	To show the current WAN is used or not	
WAN Type	To show the current WAN type	
Local IP	To show the local IP of WAN interface	
Subbet mask	To show the subnet mask	
MAC address	To show the MAC address of the router.	
PPPoE for WAN type		
Statas	To show the link status of WAN interface PPPoE	
Loca IP	To show the router IP distributed by PPPoE	
Remote IP	To show IP of PPPoE server	

5.8.5 Modem

Step 1 Log on WEB GUI of S9922 4G Router.

Step 2 Click “Status > Modem” to open “Modem” tab

Figure 5-56 Modem Status page

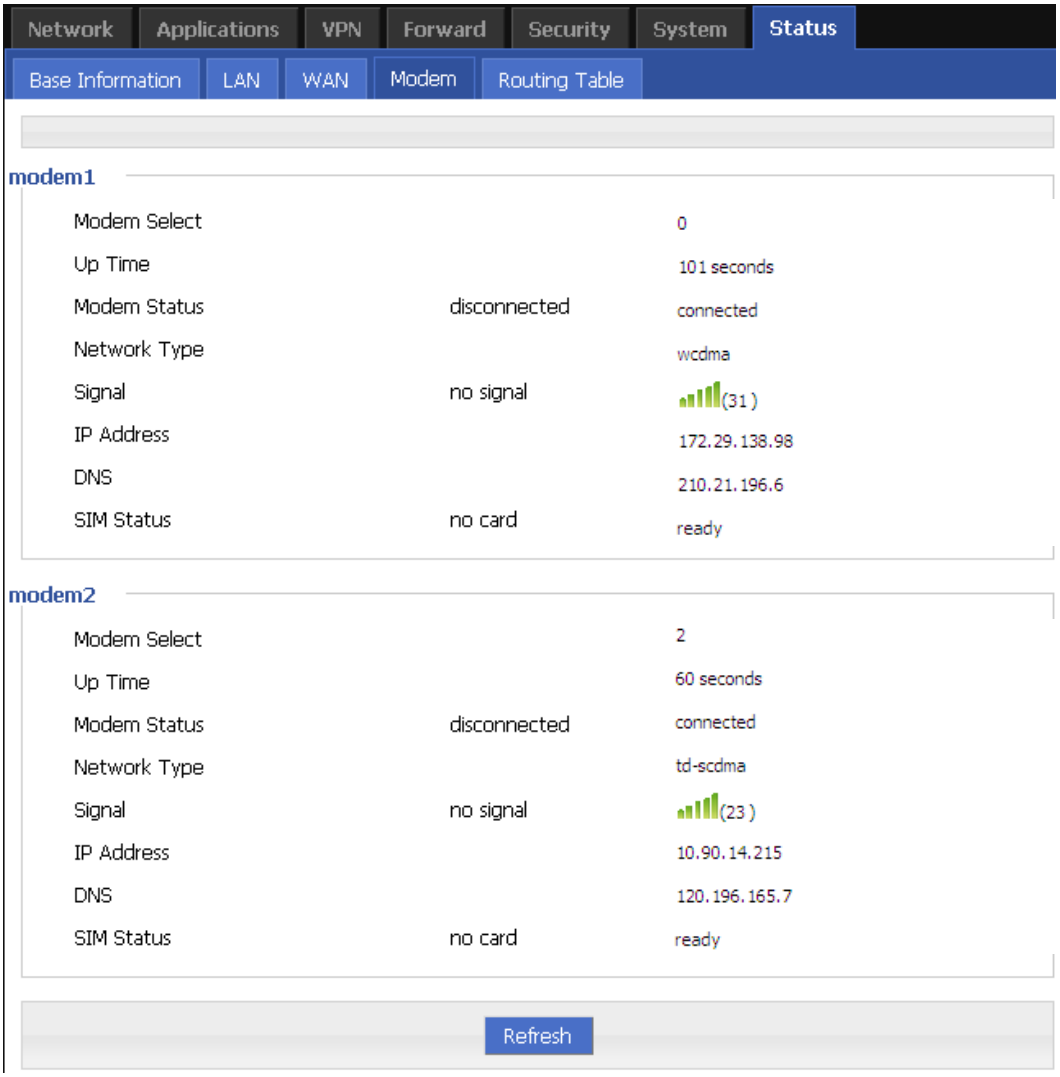


Table 5-34 Modem Parameter instruction

Parameter	Details	Operation
Modem Select	To show the current modem name	
Up tome	To show the current on line time of the modem Unit: second	
Modem Status	To show the Router's status to link to the mobile network.	
Network type	Current network type of the SIM in use	
signal	Signal of mobile network Value area: 1-31	

Parameter	Details	Operation
IP Address	To show the external network IP address which the router links	
DNS	To show which DNS router is using	
SIM Status	Status of current SIM	

5.8.6 Routing Table

Step 1 Log on WEB GUI of S9922 4G Router.

Step 2 Click “Status > Routing Table” to open “Routing Table” tab.

Figure 5-57 Routing table page

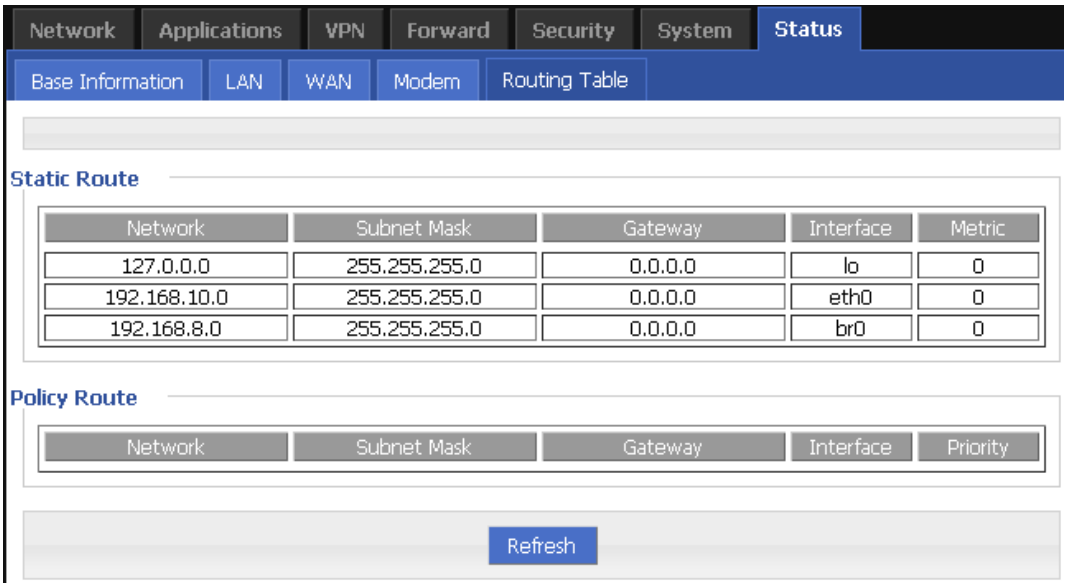


Table 5-35 Routing table Parameter instruction

Parameter	Details	Operation
Static route		
Network	IP address the router can reach	
Subnet Mask	IP network the router can reach. It is used together with “Network”.	
Gateway	Next hop IP address which the router will reach	
interface	Interface from router to gateway.	
metric	Route No which the router reaches destination IP.	
Policy route		
Priority	Priority the router select route.	

---END

5.9 RESET button function

“RESET” button is on the rear panel and next to power interface. This button can be used when the router is in use or when the router is turned on. Three are 3 functions to press “RESET” button when the router is in use:

- Press “RESET” for about 2 seconds, router will reboot.
- Press “RESET” 5-10 seconds, the router will reboot, meanwhile, the router will be resumed to default factory setting configuration.
- Press “RESET” over 20 seconds, the router will reboot, and get into CFE upgrading. The router is resumed to default factory setting configuration.

Press button when the router is turned on:

- Press “RESET” button and turn on the router, and keep pressing “RESET” for 2 seconds. The router will get into CFE upgrading mode.

---END

6 Typical application

About this chapter

Chapter	Content
6.1 Overview	Summary some typical application of S9922 LTE Router
6.2 Awake function	How to awake S9922 Router if not auto-dial
6.3 Parameter select	Parameter switch to achieve SIM backup function
6.4 VPN	S9922 Router VPN setting
6.5 Timing Task	Set Timing task on S9922 router

6.1 Overview

S9922 Router commonly used function includes wake up, parameter switch, VPN. Etc.

6.2 Awake function

Typical case

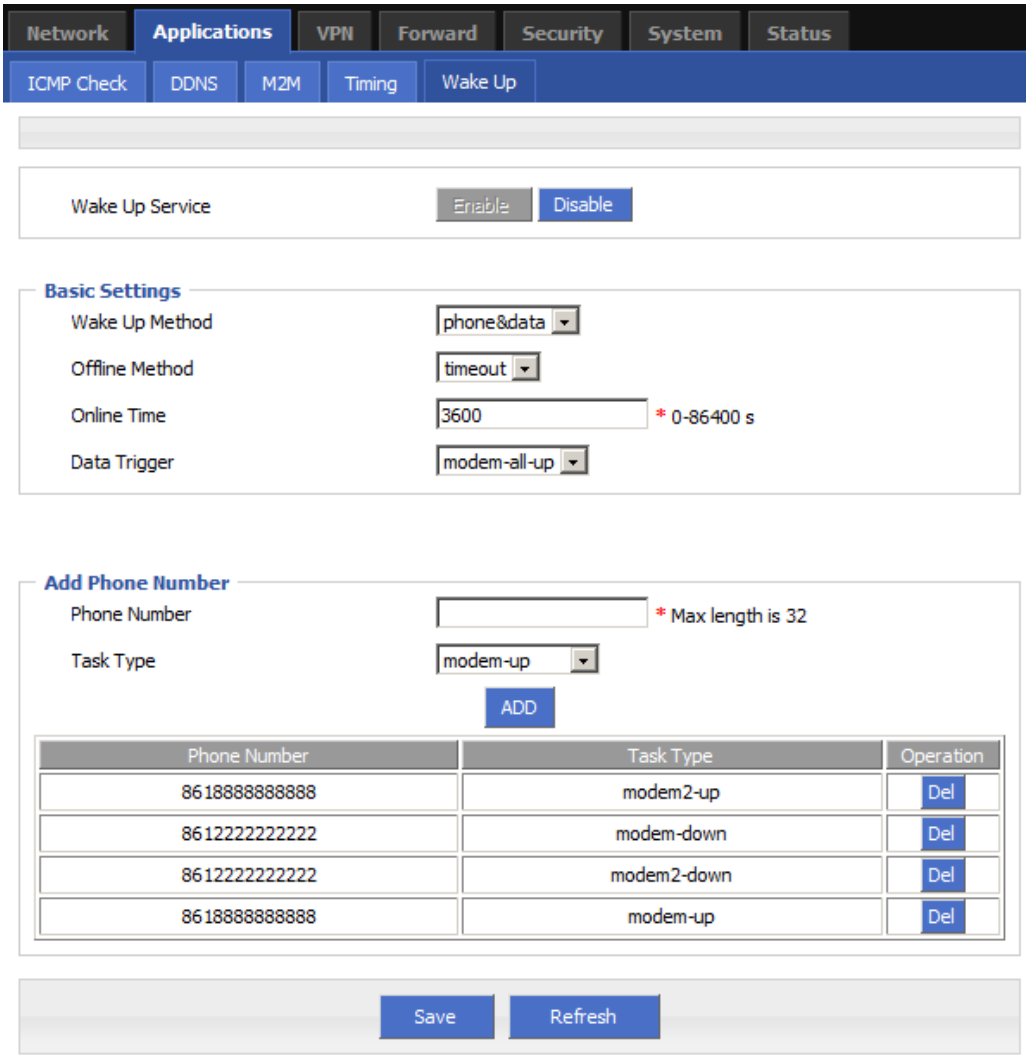
S9922 LTE Router support wake up function, means router will not auto-dial after power on, but dial triggered by data or call or SMS. Then router auto offline by idle or timeout. This funciotn could save your data traffic fee.

For example, after setting phone trigger number, a call to router by that number could trigger the router dial online, one phone number could control both modem & modem2.

parameter setting

Let us check a example:

Figure 6-1 Wake up/trigger setting example



Effect

By this setting, after router power on, if there are data trigger or you could call/SMS SIM1 or SIM2 number from 8618888888888 to tigger corresponding SIM online.ed modem will dial online, After 3600s, router will offline. Or you could use 8612222222222 to call SIM, make the router offline. Please notice, to enable this function, the SIM must support phone and/or SMS function.

6.3 Parameter select

Typical case

S9922 Router provide parameter select function, when working modem disconnect or works abnormal, router will switch to another SIM swiftly according to the rule you set. And ensure the network availability.

Parameter Select

Let us check an example

CAUTION

Please set the “Parameter select” of modem and modem2 separately

Set rules as below

Figure 6-2 Rules setting

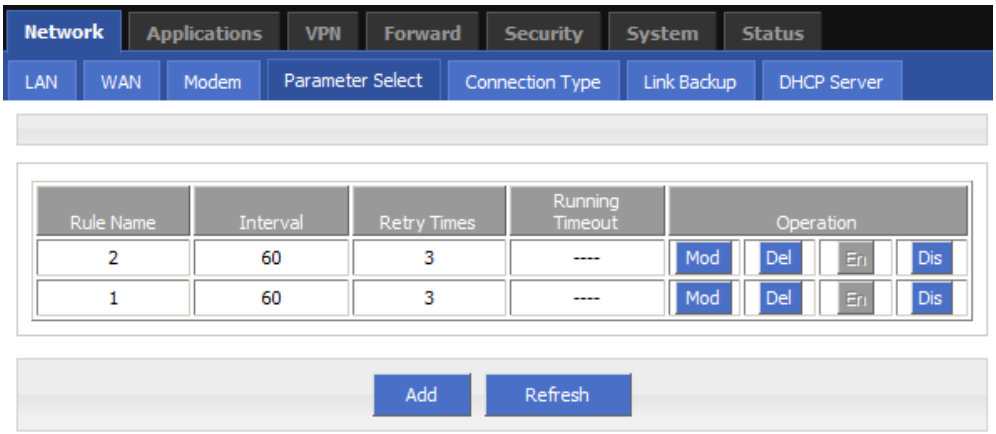


Figure 6-3 parameter select setting 1

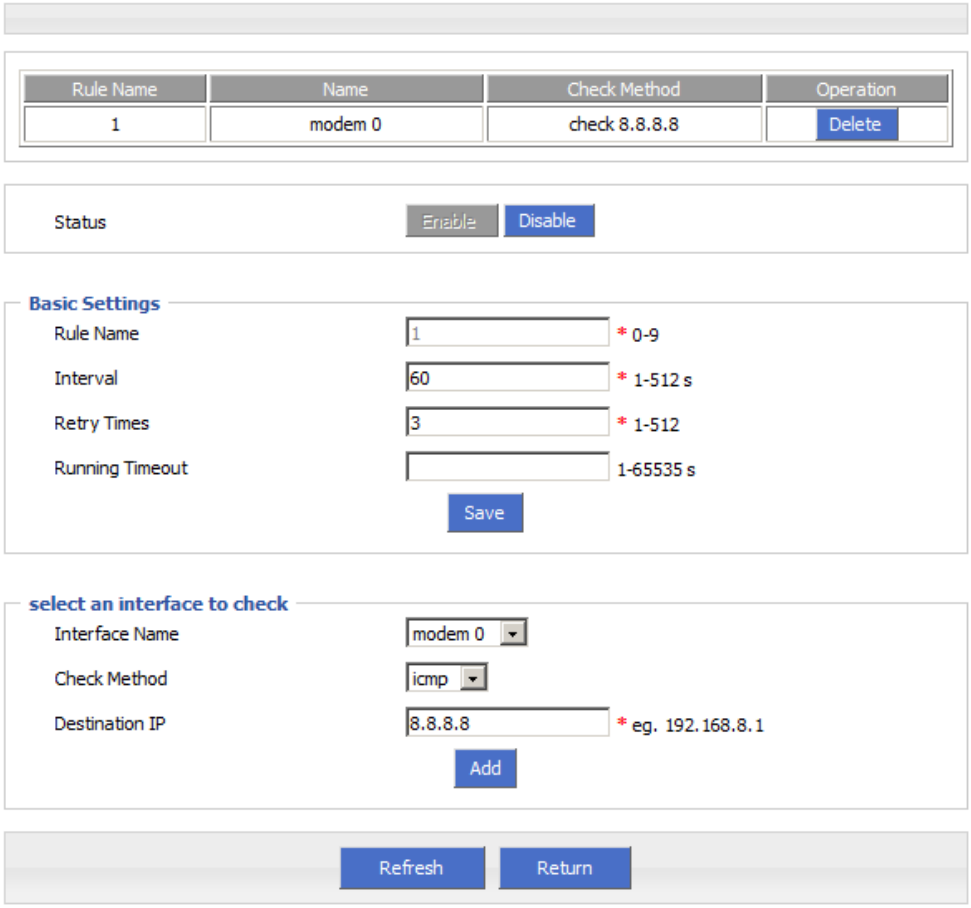
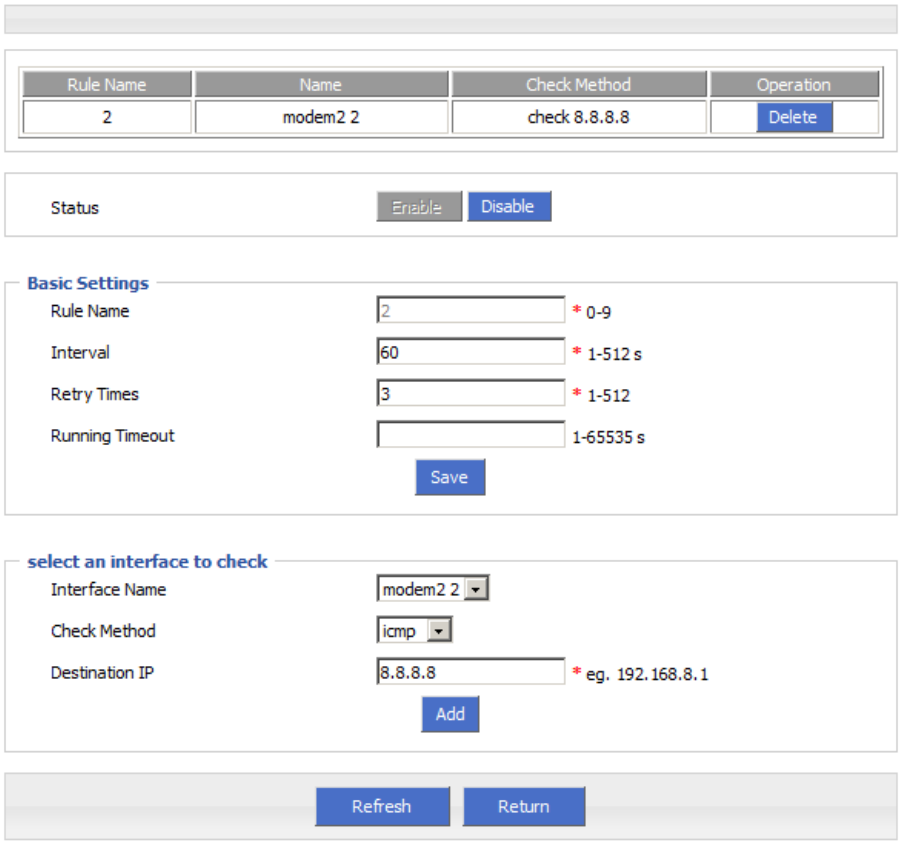


Figure 6-4 parameter select setting 2



When a working modem offline, router will run parameter select rule: “check icmp”, check the IP you set by ping, in this case, 8.8.8.8. after 3 times failure, router will switch to modem2, and dial online works again.

6.4 VPN

Introduction

VPN, virtual private network, a technology based on Internet, now S9922 LTE Router supports L2TP/PPTP/GRE/IPIP/IPSec of VPN.

L2TP used to build a virtual private network, after S9922 router connect to company NAS server, PC under S9922 could visit company network like visiting the local area network.

Parameter Setting

Figure 6-5 IPSec Phase 1

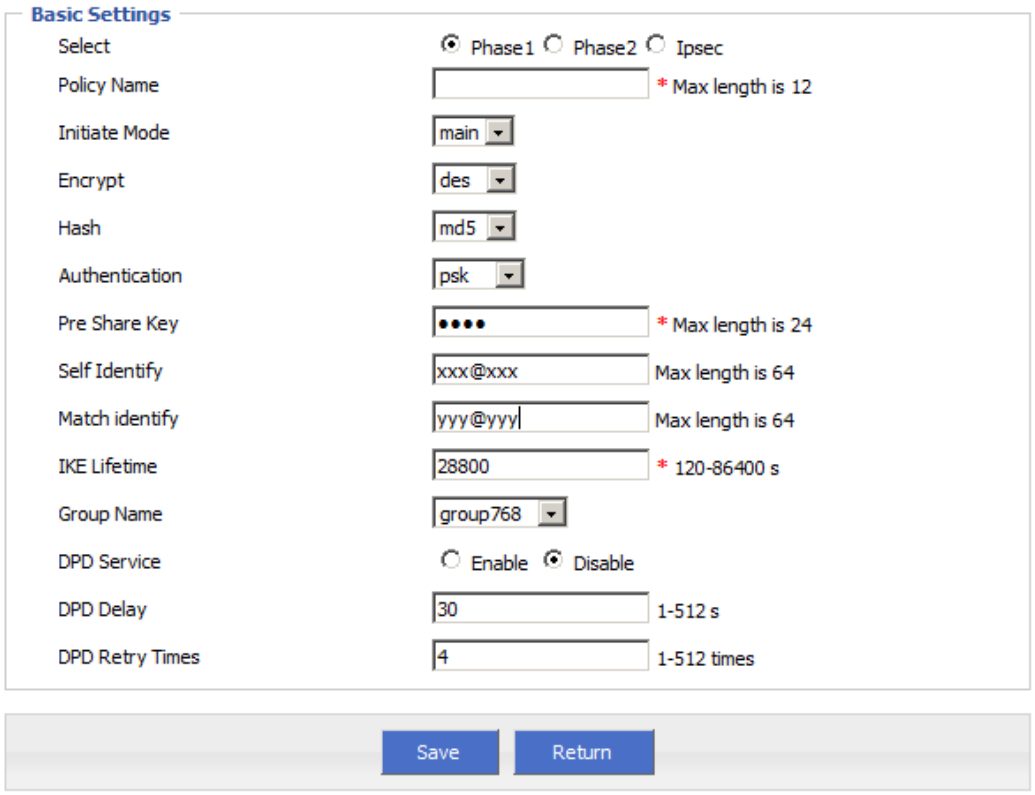


Figure 6-6 IPSec Phase 2

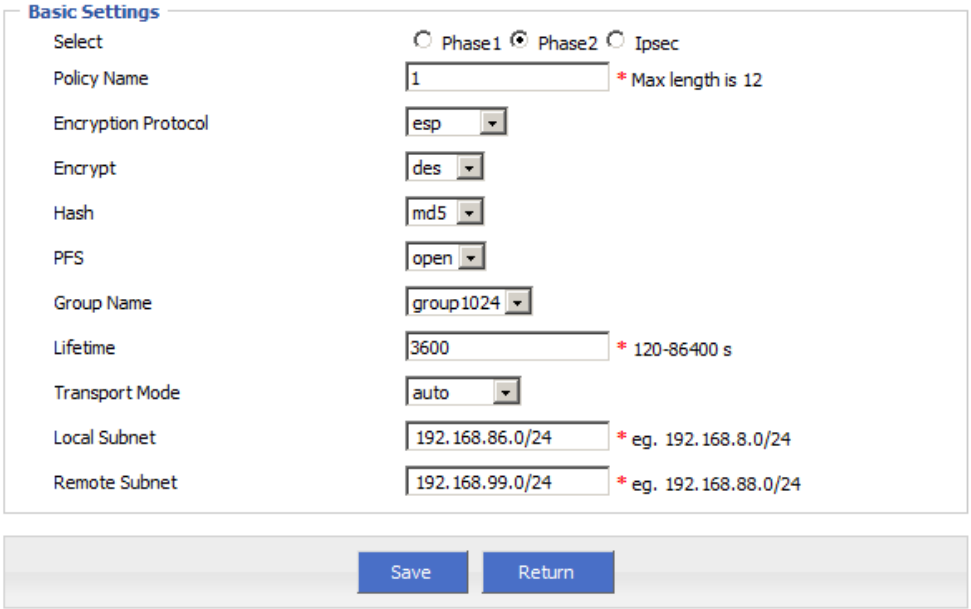
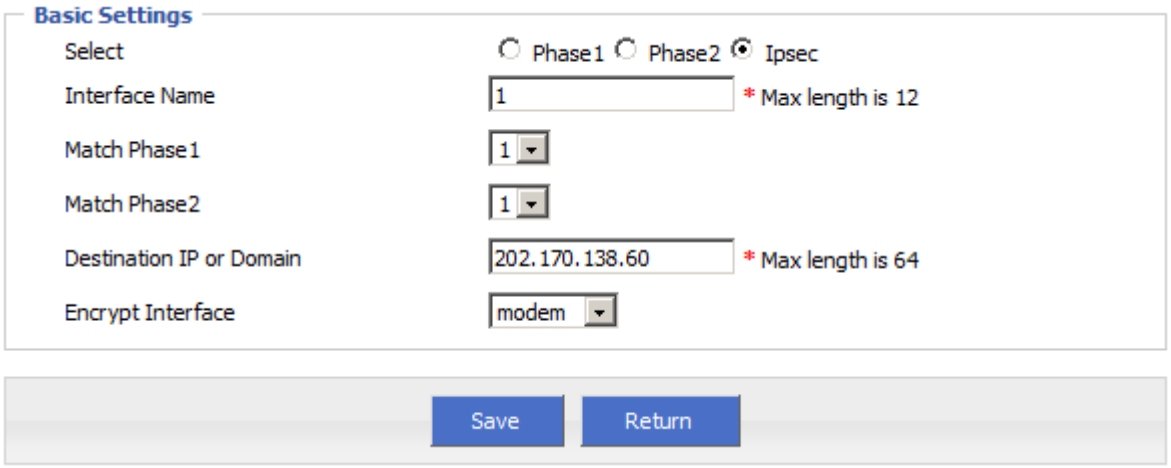


Figure 6-7 IPSec

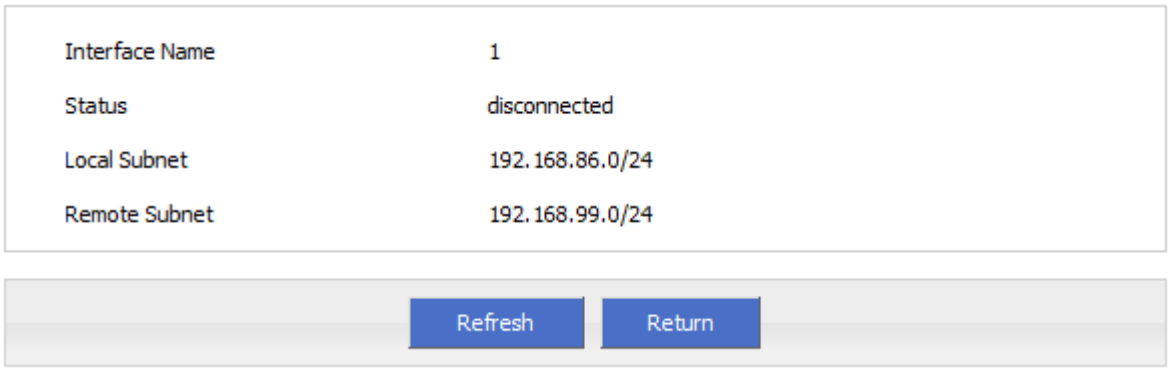


Company router server should have same setting but with a reverse identity and subnet setting of S9922 Router.

Result

After setting S9922 Router and company router parameter, they can connect each other by IPSEC, and ping peer subnet, you could check status by click “view” button.

Figure 6-8 IPSec status



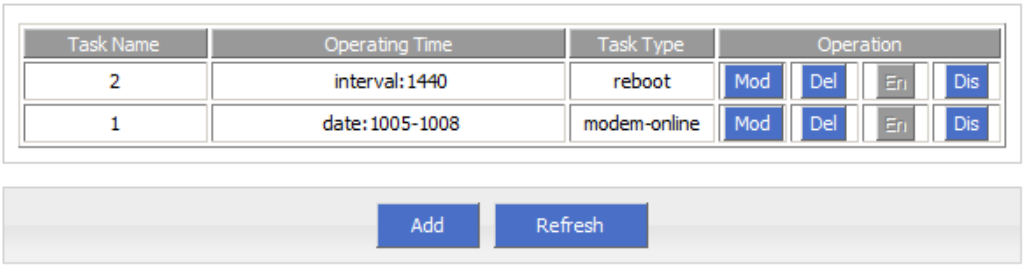

```
~ # ping 192.168.99.1 -I 192.168.86.1
PING 192.168.99.1 (192.168.99.1) from 192.168.86.1: 56 data bytes
64 bytes from 192.168.99.1: seq=0 ttl=255 time=1569.360 ms
64 bytes from 192.168.99.1: seq=1 ttl=255 time=769.937 ms

--- 192.168.99.1 ping statistics ---
2 packets transmitted, 2 packets received, 0% packet loss
round-trip min/avg/max = 769.937/1169.648/1569.360 ms
```

6.5 Timing Task

Typical Application

S9922 Router support timing task, by setting timming task, at cretain time, router will operate reboot, online command. Etc. Easier the customer operation. I assume set the router online at certain time and keep a moment, then reboot every 24 hours. You could set like below.

Figure 6-9 Timing



Result

Router will online at 10:05 AM and keep online until 10:08, then offline at 10:09.

And router will reboot every 24 hours count began last reboot.

Figure 6-10 router online

```
10:04:57 time[912]: ntpclient -h clock.via.net -s return 1{time.c->109}
10:04:57 time[912]: open the file(/tmp/ntp_first.mark) success!{time.c->254}
10:04:57 time[912]: NTP failed!{time.c->274}
10:04:59 pppd[345]: sent [LCP EchoReq id=0xf magic=0x5511fa91]
10:05:00 pppd[345]: rcvd [LCP EchoRep id=0xf magic=0xc1caf26e]
10:05:05 modem[969]: got SIG_TERM signal{modem.c->605}
10:05:05 modem[969]: argument error{hp_chat.c->533}
10:05:05 modem[1019]: modem_parameter_init :: boot!{modem.c->702}
10:05:05 modem[1019]: modem name is (0, 0){modem.c->294}
10:05:05 modem[1020]: find the modem(ZTE-AD3812:10){modemcheck.c->185}
10:05:06 modem_mg[229]: search usb device{modem_mg.c->1489}
10:05:06 modem[1020]: open the device(/dev/ttyUSB2) succeed{hp_chat.c->326}
```

Figure 6-11 router off line

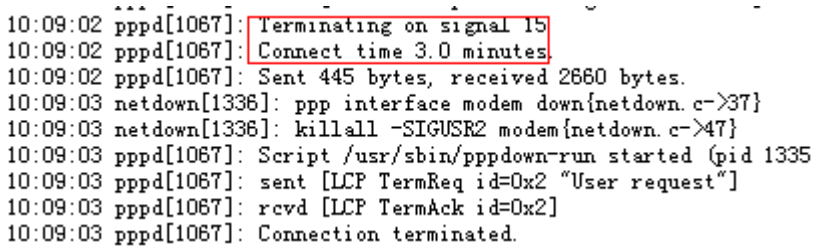
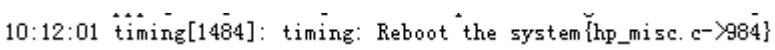

10:09:02 pppd[1067]: Terminating on signal 15
10:09:02 pppd[1067]: Connect time 3.0 minutes.
10:09:02 pppd[1067]: Sent 445 bytes, received 2660 bytes.
10:09:03 netdown[1336]: ppp interface modem down{netdown.c->37}
10:09:03 netdown[1336]: killall -SIGUSR2 modem{netdown.c->47}
10:09:03 pppd[1067]: Script /usr/sbin/pppdown-run started (pid 1335
10:09:03 pppd[1067]: sent [LCP TermReq id=0x2 "User request"]
10:09:03 pppd[1067]: rcvd [LCP TermAck id=0x2]
10:09:03 pppd[1067]: Connection terminated.

Figure 6-12 router reboot



7 FAQ

About this chapter

Chapter	Content
7.1 Hardware failure	Possible hardware failure during using S9922 Router and how to handle them.
7.2 Dial online problem	Possible problem during dialing and how to handle them
7.3 VPN	Possible problem when connecting VPN
7.4 WEB config problem config problem	Possible WEB config problem and how to handle them

7.1 Hardware Failure

7.1.1 All LED dark

Phenomenon

Router LED all dark.

Possible Reason

- Power supply does not match, it should be 5-36VDC
- No power supply

Solution

- Make sure the power supply is 5～36VDC
- Check the power adapter and cable connection.

7.1.2 SIM Slot

Phenomenon

Cannot insert SIM card

Possible Reason

- SIM slot damaged
- SIM card wrong direction.

Solution

- SIM slot damaged, please contact us to repair.
- Check the SIM card direction, please make sure the SIM goldfinger is up.

7.1.3 Ethernet Connection

Phenomenon

LAN LED dark, cannot visit router WEB GUI.

Possible Reason

- Etherenet cable connection problem
- Ethernet cable damage
- PC end network card abnormal

Solution

- Re-connect Ethernet cable
- Change a Ethernet cable
- Check network card setting on PC end

7.1.4 Antenna Connection

Phenomenon

Cannot connect antenna

Possible Reason

- Antenna type do not match
- Wrong connection

Solution

- Please check antenna interface, should be SMA-J
- Please check antenna type, there are 3G/LTE and WIFI, GPS antenna, do not mix them.

7.2 Dial Online Problem

7.2.1 Dial discontinue

Phenomenon

S9922 Router discontinue during dialing, dial failure

Possible Reason

- SIM card network type do not match
- SIM charges owed
- Power supply do not match
- Modem setting wrong

Solution

- Change to a suitable SIM card
- Recharge SIM card
- Change to suitable power supply
- Change Modem setting, please check relared chapter

7.2.2 No Signal

Phenomenon

S9922 Router modem status show no signal.

Possible Reason

- Antenna connect wrong
- Modem cannot online
- Modem offline

Solution

- Connect suitable antenna
- Modem cannot online, check SIM and modem setting
- Modem offline, check router setting, like wake up setting, ICMP setting, check if there are any setting make router offline

7.2.3 Cannot find SIM/UIM card

Phenomenon

S9922 Router cannot find SIM/UIM card

Possible Reason

- SIM card damage
- SIM bad contact

Solution

- Replace SIM card
- Re-install SIM card

7.2.4 Poor Signal

Phenomenon

S9922 Router no signal or poor signal

Possible Reason

- Antenna connect wrong
- Area signal weak

Solution

- Check the antenna and re-connect it.
- Contact Telecom Operator to confirm signal problem
- Change to high-gain antenna

7.2.5 Compress Protocol not match

Phenomenon

S9922 Router dial failure, log shows compress protocol not match

Possible Reason

Modem compress protocol do not match with server end

Solution

Change compress protocol setting

7.3 VPN Problem

7.3.1 VPDN cannot connect

Phenomenon

VPDN cannot connect

Possible Reason

- VPDN port work abnormal
- VPDN parameter wrong
- VPDN peer server abnormal

Solution

- Make sure Modem is online
- Set the correct port to VPDN
- VPDN parameter wrong.
- Check VPDN peer server

7.3.2 VPN cannot communicate

Phenomenon

VPN already connect, but cannot communicate

Possible Reason

- Router table config wrong
- VPN peer server config wrong

Solution

- Add related Router table
- Check VPN peer server setting

7.3.3 Router can communicate but subnet cannot

Phenomenon

Router can communicate but subnet cannot

Possible Reason

- VPN peer server config wrong
- Local Router has no MASQ
- Wrong local route table

Solution

- Check VPN peer server setting
- Local Router has no MASQ, please manual add VPN port MASQ
- Wrong local route table, set right route table.

7.4 WEB config problem

7.4.1 Updating firmware failure

Phenomenon

Updating firmware failure

Possible Reason

- Auto reboot during updating S9922 Router
- Power supply problem
- Wrong firmware
- Power off during updating router

Solution

- Check setting, disable the function which may cause reboot
- Change to a suitable power supply
- Ask technical support for suitable firmware
- Power off during updating router, please make sure power supply normal

7.4.2 Backup setting problem

Phenomenon

Router import backup setting failure

Possible Reason

- Backup setting file format wrong
- No reboot after backup setting

Solution

- Choose a right file to import
- Must reboot after import setting, then parameters available

7.4.3 Updating patch failure

Phenomenon

Updating fix patch failure, after updating, view fix patch and found no fix patch

Possible Reason

- Patch format wrong
- Patch name too complicated

Solution

- Check patch format, change to a right one
- Change the patch name to a simple one

7.4.4 CFE Updating failure

Phenomenon

CFE updating failure, firmware edition no change

Possible Reason

- Power supply do not match
- Firmware version or format do not match
- Power off during updating process

Solution

- If power supply do not match, please change then update again
- If firmware version, format do not match, please change then update again
- If power off during updating, please update again

7.4.5 Update failure in WEB GUI

Phenomenon

Updating by WEB GUI, failed and cannot visit WEB GUI again

Possible Reason

Firmware oversize cause updating failure.

Solution

Using CFE mode to update again, and router will restore to factory mode. If after CFE updating, still cannot visit WEB GUI, please contact us for repairing,

7.4.6 Forget Router Password

Phenomenon

Forget router login password

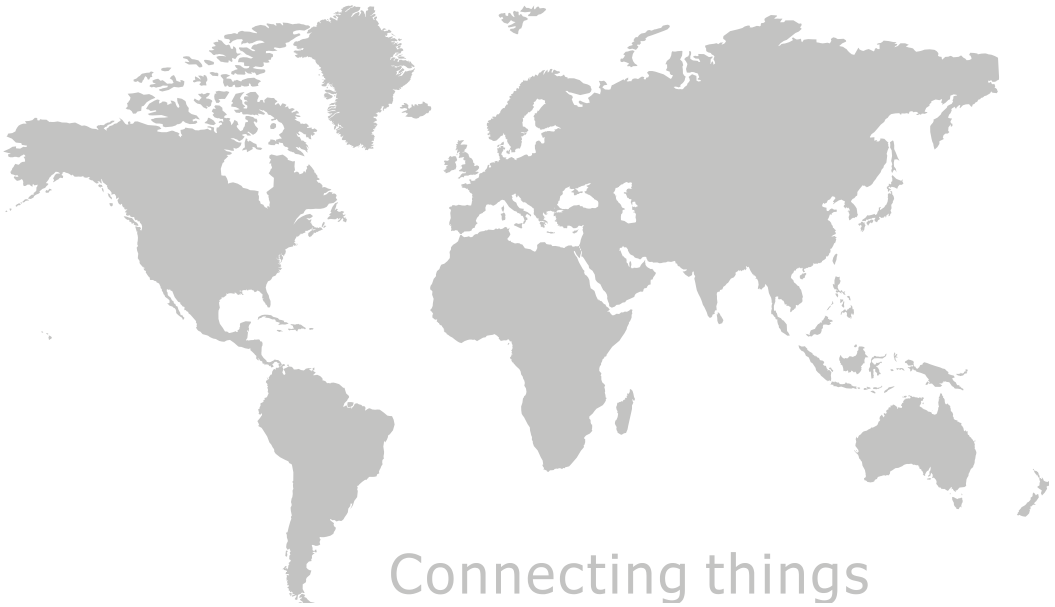
Possible Reason

User has changed the password

Solution

After router power on, push and hold RESET button over 10 seconds then release, then re-power on router, router will back to factory mode (Username/Password both admin), but patch will reserve.

When router is power on, press and hold RESET buttion around 1s, router will reboot and kept all setting.



Connecting things

RICON®
MOBILE CONNECT TECHNOLOGY

RICON Technology FZE
P.O. Box no: 16111
Ras Al Khaimah
U.A.E.

Operation office in Turkey:
Ahi Evran Cad. No.1 Polaris Plaza
Kat.6 No.32 Maslak/ İstanbul
Turkey

Tel.: (+90) 212 275 95 95
Fax: (+90) 212 346 26 70
Email: info@riconmobile.com
Web Site : http://www.riconmobile.com